

THE AUTOMOBILE

Commuting via the Automobile



HOSTS OF CARS CARRY SUBURBAN OWNERS TO AND FROM RAILROAD STATIONS EVERY BUSINESS DAY IN THE YEAR



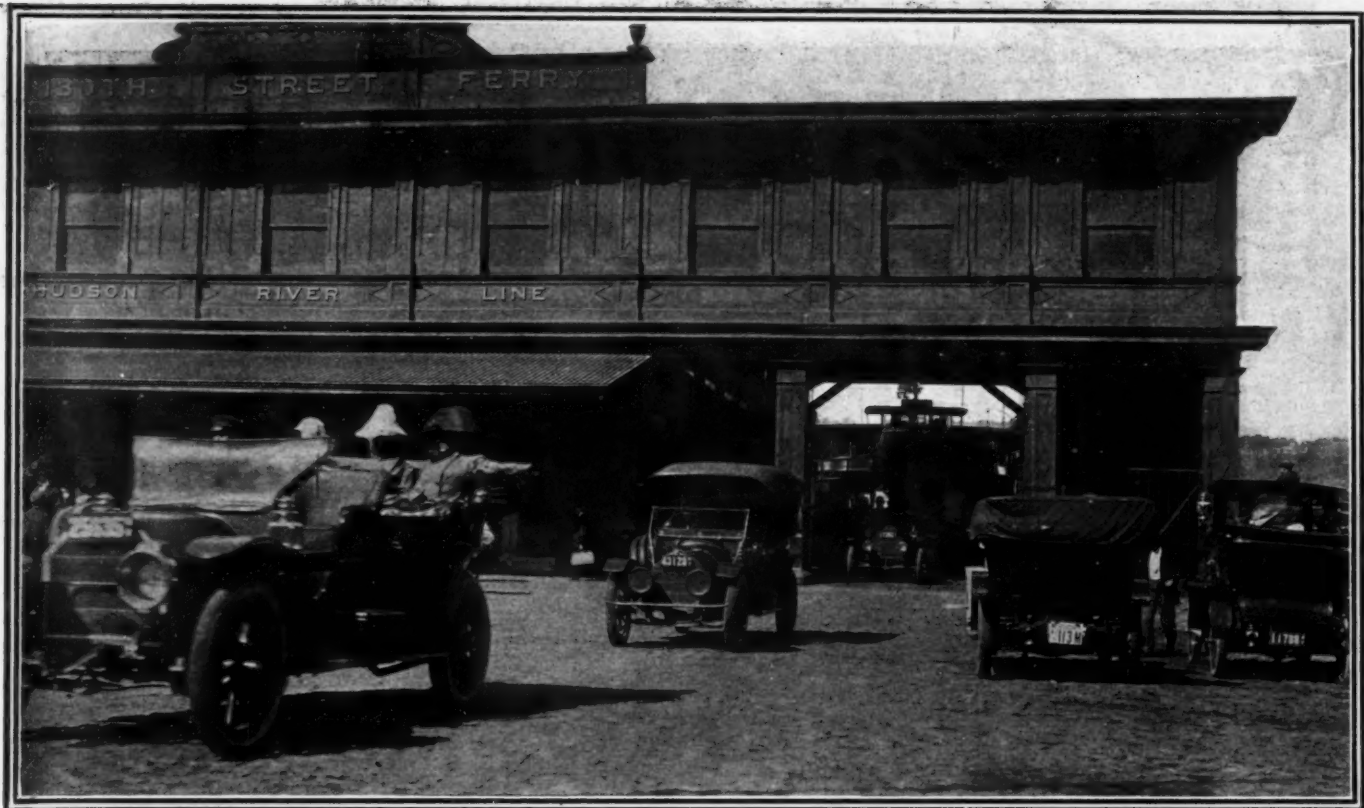
OW many are aware that residential building on Manhattan Island is steadily decreasing, despite the vast improvements that are being placed in Harlem, Washington Heights and throughout the north end? Yet it is true. The millionaires have stopped erecting palaces in central New York City, and the reason for this condition rests upon the automobile.

There is still plenty of space for such castles as those of Carnegie, Rockefeller, Clark, Vanderbilt and Astor, but the fact remains that new buildings of their class are not being erected and are not in prospect as far as Manhattan Island is concerned.

Likewise, and even more important, as showing the trend of affairs, is the condition to be noted with regard to homes for business men in comfortable circumstances, who do not come within the multi-millionaire class. They, too, are avoiding the building of homes on Manhattan Island, precisely the same reason applying as does to the situation of the very wealthy.

The figures for the first six months of 1911, covering building permits issued for construction and alteration on Manhattan Island, reach a total of \$62,662,717. As about 70 per cent. of all building permits in any one year are issued during the first six months of the calendar period, the expectation of Manhattan for the whole of 1911 is for buildings to cost \$89,518,160.

In 1910 the total of all building permits was \$108,643,090, thus indicating a decrease this year of \$19,124,930 as compared with the estimated figures for the year. From 1909 this slumping tendency was even more noticeable, as the total amount of the



The automobile plays an important part in keeping the suburbs in touch with the metropolis

permits was \$144,103,507, and 1910 showed a decrease of \$35,460,417 in comparison.

One will look in vain to business conditions for a reason upon which such a decrease in city building can be predicated.

On the other hand, the places near New York that were considered wildernesses only a few years ago are now crowned with splendid homes. From the city limits on all sides the city is growing. Even as far as 40 miles from Wall street, the captains of industry, as well as the lieutenants, sergeants, corporals and privates, have been busy in building their homes.

Take an automobile and go out from New York in any direction, either up-state, across in Jersey, out into Connecticut, upon Long Island or down on Staten Island, and the striking feature of the trip will be the vast number of fine new residences that have gone up recently or are in process of construction.

To the automobile solely is due the credit for this expansion, for, in the broadest sense, the scattering out from the centers of

congestion is wholly advantageous. No man would contend that it is not more pleasant to live and sleep in a comfortable modern house, surrounded by the beauties of nature and far from the noisy pavements and the crush and jam of the great city, than it would be to live in the same kind of a house in the midst of the urban maelstrom. On the other hand, the spaces vacated by those who are able to make the transfer of their homes from the city to the country, allow room for others to move in, and by gradual transition the teeming East Side is relieved.

Out on the rocky Connecticut hillsides, miles away from any railroad, the building is going on industriously. Away north of Mount Vernon, White Plains and Larchmont, in Westchester County, palatial homes are being added each season by the dozen; far to the east of the lateral median line across Long Island, the seekers for the surroundings of nature for their homes are spreading out; while in Jersey the same trend is pronounced.

The Connecticut farmer to whom had descended a big, barren stretch of land close to the Westchester County line and who was about to abandon it five years ago because he could not wring a living from its dry soil and hard rocks, and who despaired of getting \$10 an acre for his homestead, faces a very different situation to-day. Then he could find no one to lend money on such land and no one would agree to pay the taxes and work it on shares, or any other way.

With the coming of the automobile, which brought good roads in out-of-the-way places and a stream of wealthy tourists who could appreciate the natural beauty of the landscape without being impressed with the barrenness of the country, the price and value of his land increased wonderfully. The farmer who held his 160 acres through those dark years is beyond want to-day, for in many sections of Connecticut, near New York, values have risen from \$5 an acre to \$500, and in particular cases to as much as \$3,000 an acre.

This same land to-day is worthless for agriculture and could not be made to pay as a farming project except through the use of scientific fertilization and the modern school of production. But it forms the groundwork for dozens of fine country homes where New York business men rest and recuperate from the fierce strain of their work.



Cement and tile are frequently seen in the structural work of modern country homes

This is the way they do it: Suppose that a wealthy New York family in touring about the Connecticut hills, or Westchester wilderness, or Long Island woods, or Jersey mountains, finds a wild crag or wooded hillside or smiling valley and thereupon decides to push back the limits of space and get away from the nuisance of the crowds, the bustle, noise and discomfort of the city to enjoy the calm peacefulness, the good air, the beauty and the elbow-room of the country.

Crags, woodlands, valleys and hillsides have had a persistent bull market for the past two years or more, and it is likely that the family will have to pay roundly for the home site, but when the idea is once firmly implanted it is the hardest of all human ideas to displace and as a general rule the trade is closed.

Then the home is built and the family moves in. If the place is several miles from the railroad, so much the better. In the morning the head of the house and male members who have business in the city, step into the touring car, and, after a bracing ride, reach the station, and from anywhere within a radius of 40 miles can be anywhere in New York within the hour. The feminine members of the household can run all the way into town in the limousine or touring car for shopping or social duties and be at home by dinner time.

Then to go back again to the men: When the 5:17 train pulls into the home station, father and the boys and the visitors for a week-end, for instance, alight and the seven-passenger touring car whisks them out into nature's domain and lands them at home with sharpened appetites and alert minds and bodies.

The above illustration might be said to describe the method of life of 100 very rich men who still own vast homes on Fifth avenue and Broadway, but who spend nine months in each year at their country places, besides appearing at their offices every working day in the year except while on vacation.

For every one of the above there are 100 men in moderate circumstances who have abandoned New York City as a place of residence while still maintaining their business connection with the big town. Many of these live in isolated spots like their very rich brethren, but the bulk of them form the backbones of communities surrounding New York like the circumference of a circle. In the Oranges of New Jersey, it would be difficult to



A typical country residence and small garage located where participation in New York life would be impossible without the automobile

throw a half-brick without hitting a Standard Oil officer; in Englewood, about 20 per cent. of the wealthy class make the pilgrimage to Wall street daily; Mount Vernon, Yonkers, White Plains, Pelham, Larchmont and the outlying districts between them contribute a vast army of solid citizens every day, while the hill country of Connecticut, west of Stamford, is honey-combed with the homes of New Yorkers. The same may be said for Long Island and Staten Island, and every last one of the families represented by this newest and most effective back-to-the-soil movement owns at least one automobile.

But there is still another class involved in this development—the high-salaried employees of the New York business houses and the prosperous business and professional element. These are moving out of the congested center toward the comfortable circumference of the circle. They are striking out beyond the reach of what is ordinarily considered quick transit, and are building homes amid rural surroundings. An automobile, even



Sometimes the owner of a fine new house in the country will convert an old barn into a garage



Wooden building used to house the car of one suburbanite who has business in New York

if it is a small one, is to be found in practically every back yard, and those who have no car now intend to get one shortly.

The reason for the certainty of their movements lies in the automobile alone, because science and economy have proclaimed and experience has proved that the laborer cannot live more than 1 hour away from his work. If in the absence of street cars or other transportation to take him to the railroad station, a man is obliged to walk 2 miles or more, which requires at least one-half hour in good weather, and added to this, another half hour is allowed on the train, the limit is reached. With an automobile to carry him to the station in 5 minutes, it would be possible, from the viewpoint of practical economics, to live 55 minutes by train from his work.

Society is being gradually forced north by the inexorable decree of business. Already the encroachments of trade have squeezed the millionaires out of their homes in lower Manhattan, and the trend has grown so pronounced within the past three

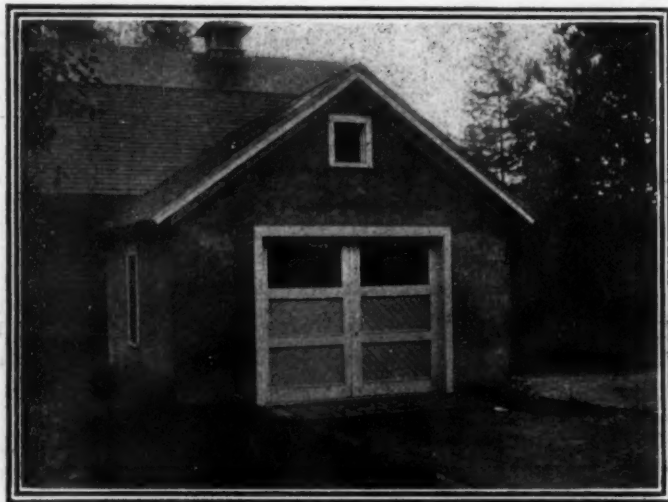
years that its significance can no longer be hidden. Hard-headed capitalists, real estate experts and economists generally are assured that in the course of a decade Manhattan Island will contain very few individual homes. In that day, they predict with confidence, that the resident population of New York will consist of apartment and hotel dwellers, to say nothing of the tenement millions. The real homes will all be out in the adjacent country, and every man who can own one will do so. Along with the home, and an essential part of it, is the automobile.

Even at present, the important part played in this movement by the automobile is generally recognized. Take, for instance, the morning the accompanying pictures were taken. The representative of *THE AUTOMOBILE* and the staff photographer first went to the Fort Lee ferry where one of the boats from the Jersey side was about to make a landing. On the boat were 18 vehicles of various sorts. There was 1 furniture van, 2 small trucks, 5 automobile runabouts, 6 touring cars and 4 limousines and town cars. In nine of the automobiles there were ladies, living at various places in Northern New Jersey, who were coming over to New York in the driving rain for shopping and social calls. The superintendent of the ferry said that on a fine day all the morning boats carried full loads of automobiles from 10 o'clock until noon.

These ladies are as certainly and as irrefutably New Yorkers as if they were living on Riverside Drive or Fifth avenue. They retain their intimate hold on the old conservative element of society that still fights stoutly against the incursion of business and consequently maintains its outposts on Manhattan Island.

They patronize the great commercial establishments of New York with even more freedom than did their ancestors, for it is easier to travel from Englewood or South Orange to New York to-day, via a big, comfortable limousine, than it used to be to drive down to the shopping district from upper Fifth avenue.

The representative of *THE AUTOMOBILE* discovered a number of fine private garages while seeking information on this subject. Some of them cost large sums of money and others very little. Perhaps the best type of garage at reasonable cost that was found is the one built by Dr. Best, of Englewood, N. J. As the accompanying picture shows, it is located back of his resi-



Dr. Best's garage at Englewood, N. J. This is built of concrete and cost \$445

dence and next to the tennis court. It is 14 feet square and is built of solid concrete based upon broken blue-rock. This garage cost Dr. Best \$445, and is ample in size and convenient.

Garages of wood cost various sums, and one of those shown herewith, of the same size as Dr. Best's, cost \$800, while the one with the tiled roof cost \$1,200.

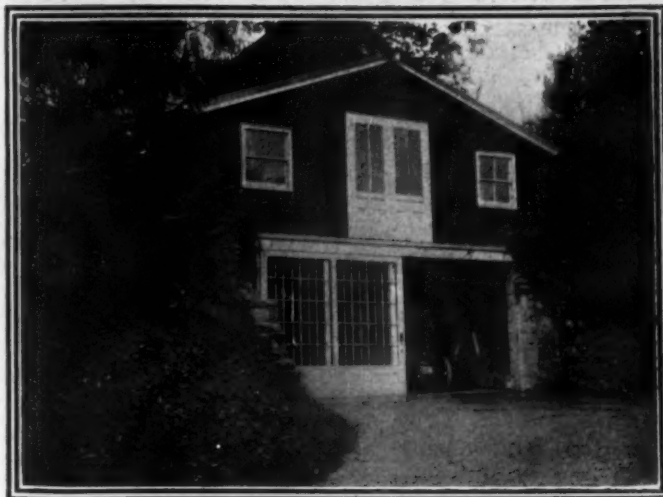
Many suburban residents ride all the way into the city in their cars. Of course this does not mean that the owner goes all the way to Wall street through the mazes of traffic, as a general thing. Occasionally such practice is used, but in the vast majority of instances where the car is driven within the city, the owner alights at some subway station and continues his journey via the tubes. In such cases the car is usually garaged nearby until the owner is ready to return home.

In the vicinity of 181st street, 145th street, 96th street, 72d street and Columbus Circle, the garages do a considerable and growing business of this character.

Living out in the country and doing daily business in the city will not save much money, if it saves any at all. The situation as it stands is hardly one of choice for the New Yorker. He is forced to move away by a power which he cannot control.

Take a typical case as an illustration: The head of the family earned a salary of \$5,000 a year and the family consisted of himself, wife and two half-grown children. They lived in one of the fine apartment houses on upper Broadway and paid \$65 a month for rent. They employed one servant at \$30 a month, and their living expenses, administered with care and economy, averaged \$150 a month. Incidentals called for \$25 a month more and transportation, amusement, clothing, insurance and the education of the children accounted for \$160 a month. The total yearly expense of this family, therefore, was \$160 more than the total earnings of the provider.

Fortunately, the family had some other resources, and when the true significance of the situation was understood and it was realized that the children were growing up under appalling conditions and that value was not being received for the tremendous outlay in all directions, it was determined to move out into the country. This family selected a location out on Long Island



Many New York business men lend a touch of the artistic to the building of their garages

and invested \$6,500 in building a home. The site is 6 miles from a railroad station, and so an automobile was found necessary. This cost \$2,500. Living expenses were only slightly decreased, but a considerable item was saved in general and incidental expenses. At the end of the first year the family discovered their financial situation to be about as follows: Interest and taxes on home and car, \$540; living expenses, \$1,650; general and incidental expenses, \$1,500; service, \$300, and the cost of operating and maintaining the car, \$930. This gave a total of \$4,920.

As an actual economy in money terms this means only \$240 a year; but, on the other hand, the family has an infinitely better home, and the children, instead of being cooped up with hundreds of others at home and jammed together with a miscellaneous assortment at school, are attending a select institution near at hand and living out-of-doors most of the time under ideal conditions for their physical well-being.



Broad street, in New York's financial center. Most of these curb brokers live in the suburbs and own cars



De Palma in Mercer, No. 8, leading the field in the five-mile race for non-stock cars under 301 cubic inches

Short Program at Guttenberg

THE Guttenberg track races were run off according to schedule last Saturday in spite of the rain which fell the day before the race. The track had dried under the influence of the wind and the warm sun and was in ideal condition for the races. The attendance was very good, a large number of those present coming in automobiles.

The races were well contested and furnished plenty of excitement for those who were clustered in the grandstand and in the enclosure. DePalma proved to be the chief attraction in his endeavors to lower the existing records for the track, which is a 1-mile dirt course of elliptical shape.

The 5-mile non-stock event for private owners proved to be the most closely contested race. There were three Regal cars entered, each driven by its owner. Sam From led the field on the first lap but was gradually overhauled by Ira Vail, who won the money. This event was the last of the contested races as after De Palma had lowered the track record for the mile, the 5-mile free-for-all was scheduled and that ended in an accident.

There were three entries in the free-for-all—De Palma in a Mercer, Grey in a Schacht and Koopman in a National. De Palma got away first but close on his heels was the National which clung to the inner edge of the track. The first lap was circled with these two far in the lead and the National car slowly creeping up. When the second lap was started they were so close that all those assembled rose to their feet to watch the speeding cars. The end of the ellipse was reached and both cars swung around the turn, the National just behind the Mercer. The Mercer car had just about reached the

straighter part of the course when a cry went up. The National car had struck the inner edge of the track and bounded high in the air, revolving as it fell and striking the ground upside down. Koopman was pinned beneath the upturned car, while his mechanic lay in a pool of blood alongside the track. Both were picked up and carried away from the blazing car to the field hospital. The car was badly smashed, especially the front axle and the steering gear. The damage to the motor was comparatively slight. The injuries to the crew of the damaged car are feared to be serious, although not necessarily fatal.

The program was concluded by a 5-mile exhibition race against time by De Palma in a Simplex. He broke the Guttenberg track record for this distance. The summaries:

Five Miles, Non-Stock, Class E, Under 231 Cubic Inches

No.	Car.	Driver.	Time.
5	Paige-Detroit	Bill Regan	6:28 3-5
4	Regal	Chas. Tate	6:33 3-5
11	Regal	Emery Smith	6:58 3-5

Five Miles, Non-Stock, Class E, Under 301 Cubic Inches

8	Mercer	Ralph DePalma	5:38 1-5
3	E. M. F.	Jack Towers	5:45 2-5
6	Schacht	J. M. Grey	6:07 2-5
5	Paige-Detroit	Bill Regan

Five-Mile, Non-Stock, for Private Owners

12	Regal	Ira Vail	6:40 4-5
10	Regal	Sam From	7:05 1-5
11	Regal	Emery Smith

Five-Mile, Free-for-All

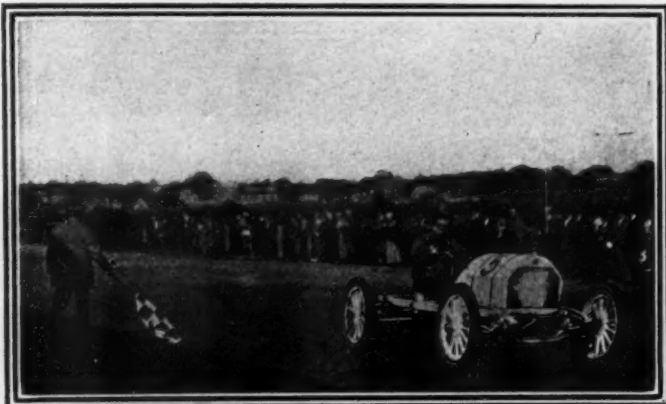
Not finished owing to accident to National car driven by Koopman.

Mile Trial for Track Record (0:59 2-5)

Simplex	DePalma	:58 1-5
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Five-Mile, Time Trial for Track Record (5:20)

Simplex	DePalma	4:51 1-5
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Paige-Detroit, No. 5, winning the five-mile race for small cars

Truck Test at the Golden Gate

SAN FRANCISCO, Sept. 26—The first motor truck test projected in northern California is to take place here October 4-5. Already more than a score of big machines have been entered in the contest, and the greatest interest is displayed among the dealers who have truck interests. The White Company alone has entered five trucks.

The first day's run will be from San Francisco down the peninsula to San Jose and return, a total distance of a little under 100 miles. On the second day the cars will remain within the boundaries of the city. It does not appear that the test is going to be very strenuous, plenty of time being permitted for the San Jose run on the first day and for the distance to be negotiated on the following day.

Inquest at Syracuse

SYRACUSE, N. Y., Oct. 4—The New York State Fair Commission, driver Lee Oldfield, the American Automobile Association, Referee A. R. Pardington and the crowd were held by the Coroner's jury to have been guilty of negligence at the inquest to-day in the matter of the recent terrible fatality at the State Fair track, when the Knox automobile driven by Oldfield crashed through the fence and killed eleven persons and injured nine. Nobody, however, was found sufficiently culpable to justify charges of manslaughter, and Oldfield, who had been under technical arrest, was released.

The evidence adduced showed a dispute between Lee Oldfield, the driver, who early this week had completely recovered from his injuries and left the hospital, and Manager Moross regarding the responsibility for his remaining in the race after it was known that his tire had gone bad. The tread of one of De Palma's Simplex tires had come off when the Italian was leading in the 50-mile race by a mile. Oldfield's testimony was to the effect that he was signaled to keep on in the hope that De Palma's tire would burn out and allow Oldfield to take the lead. Moross denied this, and said that Oldfield kept on on his own responsibility.

The evidence further showed police protection that might have been looked for at a half-mile track in the country districts. The policing was in charge of a clerk in a meat store. With 30 men assigned to him, he accounted for 14. The original plan had been to police the track with 125 regular and special police and with a militia detachment from this city. The militia-men left the grounds before the accident. The police that remained mostly mingled with the crowd, and with onlookers grabbed for souvenirs after a previous accident to Burman's Blitzen-Benz. A picture taken by an amateur photographer, just before the accident, showed the crowd encroaching upon the course at the fatal turn.

An important witness was A. R. Pardington, of The A. A. A., referee of the races. Mr. Pardington declared emphatically that he believed Lee Oldfield to be the right name of the responsible driver. Mr. Pardington said that if Lee Oldfield had perjured himself in taking out a license under a name not his own, that the fraud would have been discovered ere now and his license revoked. Mr. Pardington added that the reason the races were not stopped immediately was because to have done so would have been to precipitate a disastrous panic.

It is said on excellent authority that the surviving relatives of the deceased will soon bring actions for financial redress against the State.

Track Racing for Columbia, S. C.

COLUMBIA, S. C., Oct. 2—Two days of automobile racing will be presented to automobile enthusiasts of this section on November 3-4, when the meeting promoted by the Automobile Club



Mercer leading the National in the free-for-all at Guttenberg

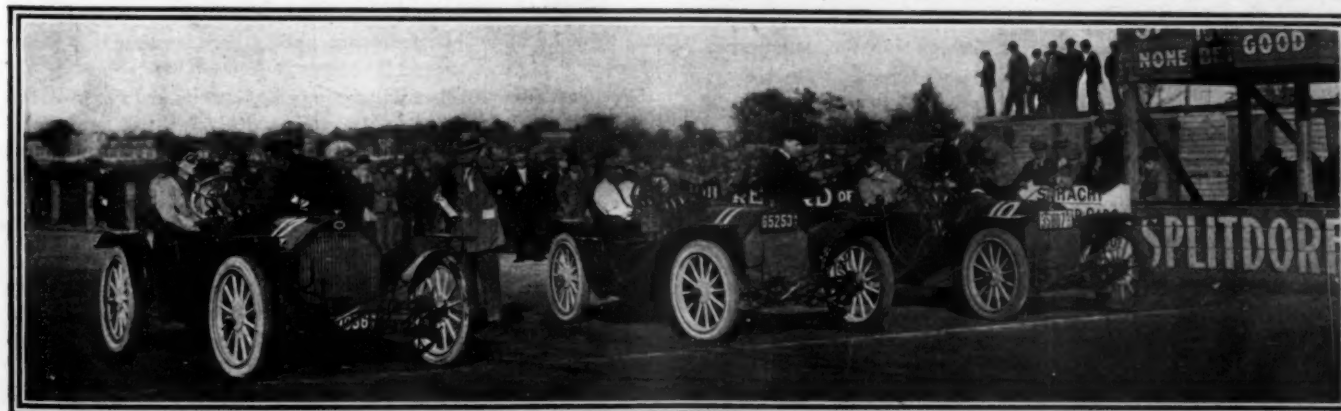
of Columbia is held at the State fair track. The affair has been fully sanctioned and purses aggregating \$1,325 hung up.

The races range from mile trials to 25-mile free-for-alls. No stock car races have been carded, the classes being C and D. A handsome piece of plate is offered for the mile trials. Entries close October 27.

Local Mile Record Falls at Bridgeton

BRIDGETON, N. J., Oct. 2—The South Jersey mile record on a half-mile track was broken Saturday afternoon by a Kline (Morton), which made the double circuit in 1:15. The races were well contested and proved interesting despite the small fields. The stands and paddocks were fairly filled with 2,500 enthusiasts. The summary:

Five-Mile Handicap			
Car	Driver	Position	Time
Kline	Menker	1	7:30
Hudson 20	Luinney	2	
Five-Mile Handicap			
Kline	Menker	1	6:37 4-5
Knox	Dinapoli	2	
Five-Mile Match			
Mercer	Ringler	1	6:34 3-5
Kline	Morton	2	
Five-Mile Match			
Jackson	Bloxton	1	7:18 1-5
Knox	Dinapoli	2	
Five-Mile Match			
Mercer	Ringler	1	6:38 1-5
Kline	Morton	2	
Five-Mile Handicap			
Mercer	Ringler	1	6:50 3-5
Abbott	Padula	2	
Mile Trials			
Kline	Morton		1:15
Knox	Dinapoli		1:19
Kline	Menker		1:20



Start of the five-mile race at Guttenberg, for private owners, in which three Regal cars contested—won by No. 12, driven by Ira Vail

Spaces Awarded at N.A.A.M. Shows

NEW YORK, Oct. 4.—At the meeting of the N. A. A. M., held at the headquarters of the association this afternoon, positions were drawn for next winter's Chicago and Palace shows. Ninety-six makers drew for space at the Chicago pleasure car show, January 27 to February 10, of whom forty-seven were assigned places in the Coliseum, eighteen in the Coliseum basement, and thirty-one in the First Regiment Armory. The companies were divided into three general classes. The first of them was composed of members of the National Association of Automobile Manufacturers; the second, of members of the Automobile Board of Trade, who were not members of the National Association, and the third class included the independents.

The first class was divided into sections marked off by the amount of business the companies did, and the number of shows they participated in. Each class was exhausted before the next class was taken up. Space was awarded on that basis as follows:

COLISEUM—A1 Winton; A2 Rambler; A3 Franklin; A4 Buick; A5 Marmon; A6 E-M-F; B1 Woods; B2 Locomobile; B3 Lozier; B4 Hudson; B5 Reo; B6 Oldsmobile; C1 Packard; C2 Pierce-Arrow; C3 Stevens-Duryea; C4 Chalmers; C5 National; C6 Pope; D1 Maxwell; D2 Stoddard-Dayton; D3 Premier; D4 Cadillac; D5 Overland; D6 Peerless; E1 Brush; E2 Thomas; E3 Pullman; E4 Knox; F1 Columbia; F2 White; F3 Haynes; F4 Corbin; G1 Everitt; G2 Hupp; H1 Oakland; H2 Stearns; J1 Matheson; K1 Mitchell; L1 Abbott-Detroit; M1 Alco; N1 Cole; O1 Elmore; O2 Baker Electric; P1 Ohio Electric; Q1 American; Q2 Selden; Q3 Glide.

FIRST REGIMENT ARMORY—A1 Hupp Corporation; A2 Waverley; A3 Columbus; A4 Interstate; B1 Marquette; B2 Moline; B3 Rauch & Lang; B4 Case; C1 Garford; C2 Detroit Electric; C3 Simplex; C4 Cartecar; D1 Jackson; D2 Regal; D3 Austin; D4 DeTamble; E1 Kissel; E2 Staver; E3 Krit; E4 Cunningham; E5 Great Western; E6 Fiat; F1 Clark-Carter; F2 Imperial; G1 Babcock; G2 McIntyre; G3 Auburn; G4 Paterson; G5 McFarlan; G6 Moon; H1 Dorris.

BASEMENT OF COLISEUM—1 Stutz; 2 Elkhart; 3 Cino; 4 Borland; 5 Broc; 6 Halladay; 7 Warren-Detroit; 8 Zimmerman; 9 Michigan Buggy Co.; 10 Lion; 11 Buckeye; 12 Speedwell; 13 Ohio; 14 Marion; 15 Republic; 16 Paige-Detroit; 17 Crow; 18 Schacht.

Accessory spaces in the Coliseum number 135 and the M. & A. M. have contracted for all; besides there are several members over and above who have applied for space. In the gallery of the Armory there are 30 spaces to be divided among 70 applicants, not members of the organization. For the truck week the preliminary showing is so strong that already it has been determined to use both the Armory and the Coliseum for the commercial display.

The drawings for spaces in the commercial show, which is scheduled for the second week, are as follows:

COLISEUM—Section A, Baker, Rambler, Mack; Section B, Reo, Kelly, Pope, Rapid, Grabowsky; Section C, Franklin, Stearns, Cartecar, Waverley, Packard and Locomobile; Section D, Peerless, Brush, Gramm, Metzger, Knox; Section E, Alco, Detroit Electric, Schmidt; Section F, Kissel, Pierce-Arrow; Section G, Reliance; Section H, General Motors; Section J, Staver; Section K, Lozier; Section L, McIntyre; Section M, Avery; Section N, Rassel, Federal, Adams; Section O, Eclipse; Section P, Clark, Sampson; Section Q, Dorris, Dayton, Durant-Dart; United States Motors Company.

FIRST REGIMENT ARMORY—Section A, Stegeman, Walker; Section B, Packers, Smith, Coleridge, Lauth-Juergens; Section C,

Sternberg, Lee; Section D, National, Universal; Section F, Schacht.

The result of the drawings for space in the show at the new Grand Central Palace, January 10-17, follows:

MAIN FLOOR—Section A, Paterson, Velie, Ohio Electric, Imperial, Cutting, Waverley; Section B, Hupp Corporation; Section C, Paige-Detroit, Ames; Section D, Fiat, Cole; Section E, Marion, Stutz, Krit; Section F, Hupmobile, Warren-Detroit; Section G, Babcock Electric; Section J, KlineKar; Section K, Abbott-Detroit; Section L, Cino, Colby; Section M, Rambler, Regal, Schacht, Auburn, DeTamble; Section N, Lion, Middleby; Section O, Great Western, McFarland.

SECOND FLOOR—Section A, Elkhart, Crow. All the remainder of the exhibits on this floor are trucks, as follows: Gramm, Waverley, Schacht, Lauth-Juergens, National, Packers, Kelly, Durant-Dort, Eclipse, Universal; Section B, Sanford, Newark; Sections D and E, Atterbury; Section F, Walter, Dayton, Raffel; Section J, Sullivan, Lippard, Cortland.

The new Grand Central Palace is a giant structure, being bounded by Lexington avenue, Forty-sixth and Forty-seventh streets and Depew place. The floors that will be used for show purposes are the main, second and third. A court extends from the main floor to the ceiling of the third and the dome-like roof over this portion of the hall is supported by Corinthian columns of ornate structure.

The interior of the building is considerably cut up by pillars and it is problematical still how far this type of architecture will lend itself to automobile show purposes. But it is artistically beautiful. The pillars will not interfere with the showing of particular exhibits, because the space is ample and access from all sides will be easy, but it will be impossible to get any such general view of the display as is afforded by the arrangement of Madison Square Garden.

A grand stairway leads up to the main floor from the street level and the first impression of the hall is that of vastness. The rather low ceiling adds to this impression, paradoxical as that may seem. The pillars are in several styles, ranging from the Corinthians with their decorative capitals to square, business-like columns that are simply utilitarian.

The second floor is arranged around the court, with a large amount of space available on the Lexington avenue side, while there is still more room for exhibits on the third floor, due to the partial closing of the court. Each floor is approximately 194 by 268 feet, thus without making allowances for the court and various portions of each floor that are not available for show space, the total area of the three floors is 155,376 square feet. Probably 25,000 square feet should be deducted from this total to make allowance for space used otherwise than for show purposes.

The decorative scheme will be mosaic, but its details still remain to be worked out. Mr. Miles declares that any such scheme of decoration as has been used in many of the big shows of the past would seem like painting the lily, as applied to the palace. The ornamentation will undoubtedly be simple so that it will not detract from the architectural beauties of the building.

Some progress has been made in the details of the Madison Square Garden show, but the work is moving slowly. It is not likely that floor plans will be issued for several weeks. The Motor and Accessory Manufacturers have announced that about 150 of their members would show at the Garden during the week when the pleasure cars are on exhibition. Fully ninety M. A. M. members will show during the truck week at the Garden.

Automobile Aids Carriage Builders

ATLANTIC CITY, N. J., Sept. 30—The thirty-ninth annual convention and exhibition of the Carriage Builders' National Association were held on Young's Million Dollar Pier during the past week, the exhibition extending throughout the entire week, from Monday to Friday, inclusive, and the convention proper covering a period of two days, Tuesday and Wednesday, when the regular business of the association was taken up and officers elected for the ensuing three years. Delegates were present from all over the country and the industry was shown to be in a flourishing condition, despite the inroads made by the horseless vehicle. Rather, as E. C. Mulcey, of Philadelphia, in an address on "Electricity as Related to the Vehicle Industry" said, the use of the automobile has broadened the scope of the wagon and carriage builders' art and brought to carriage and wagon manufacturers new fields for the sale of their product, and suggested the amalgamation of wagon and carriage builders with experts on engines, electric motors, storage batteries, etc., to their mutual advantage. Disclaiming the idea that the automobile was a competitor opposed to the vehicle builder's interest he asserted that the former was strictly a branch of vehicle building and a development of that art brought about by the demands of modern times.

President Charles J. Richter's address to the delegates on Tuesday dealt with the future of the carriage and during the course of his remarks he said that although the carriage has been largely superseded by the horseless vehicle in the large centers of population, there is still a steady demand for the horse-drawn carriage, and claimed the light horse-drawn pleasure carriage will always have its devotees.

The consensus of opinion among the speakers was to the effect that automobile manufacturers and wagon and carriage builders should work together, their interests being identical in many respects.

Headquarters of the convention while in Atlantic City were established at the Marlborough-Blenheim, where also the annual banquet was held.

The following officers were elected: President, William H. McCurdy, Evansville, Ind.

Secretary-Treasurer, Henry C. McLearn.

Trustee of Technical School, William R. Innes, New York. Executive Committee, Charles C. Hull, Connorsville, Ind.; Charles H. Lancaster, Merrimac; George A. Brockway, Homer, N. Y.; C. O. Wrenn, Norfolk, Va.; W. A. Sayres, Cincinnati, O.

In number and variety of exhibits of vehicle parts the exhibition was up to previous shows and the attendance excellent.

The following manufacturers and jobbers of automobile accessories were represented at the exhibition and had displays:

American Tire Drill Company, Cincinnati, O.—Motor-driven and belt driven tire drilling machines.

Backstay Machine & Leather Company, Union City, Ind.—"Never-Burst" wire-bound prop blocks, patent valances for stitching on tops, patent auto top tack valance, auto straps, etc.

D. W. Byron & Sons, Williamsport, Ind.—Leather for automobile, carriage and furniture manufacturers.

W. H. Coe Manufacturing Company, Providence, R. I.—Coe's ribbon gold leaf and gilding wheels, for striping, lettering and decorating automobiles, carriages and wagons.

Consolidated Rubber Tire Company, New York City—Kelly-Springfield sectional truck tires and solid carriage tires.

Cortland Forging Company, Cortland, N. Y.—Auto top and buggy forgings.

Crandal, Stone & Company, Binghamton, N. Y.—Bow sockets and top hardware for automobiles and carriages.

Ditzler Color Company, Detroit, Mich.—Automobile, coach and car colors.

Dusenbury, Louis & Company, Inc., New York—Automobile and carriage upholstery, automobile top fabrics, etc.

Eberhard Manufacturing Company, Cleveland, O.—Automobile, carriage and wagon hardware.

Eccles Company, Auburn, N. Y.—Automobile forgings, etc.

Enterprise Brass & Plating Company, Cincinnati, O.—Robe rails, dash rails, arm rails, handles.

Excelsior Seat Company, Columbus, O.—Automobile seats, runabout seats, etc.

Fabrikoid Works, E. I. duPont de Nemours Powder Company, Newburgh, N. Y.—Artificial leather and automobile top goods.

Fairfield Rubber Company, Fairfield, Conn.—Full line of automobile and carriage cloths.

Herbrand Company, Fremont, O.—Automobile wrenches, etc.

Goodyear Tire & Rubber Company, Akron, O.—Wing and eccentric cavity cushion tire rubber.

Gramm Motor Truck Company, Lima, O.—Five-ton chassis, three-ton chassis, etc.

Liggett, Spring & Axle Company, Pittsburgh, Pa.—Automobile springs and axles, brass fittings for automobiles.

Metal Stamping Company, Long Island City, N. Y.—Automobile trimmings and hardware, etc.

Mohawk Valley Manufacturing Company, Utica, N. Y.—Automobile mufflers, etc.

Muncie Wheel Company, Muncie, Ind.—Automobile wheels, etc.

Rogers & Company, Inc., Philadelphia, Pa.—Limousine and touring car trimmings, brass goods, etc.

Rose Manufacturing Company, Philadelphia, Pa.—Neverout lamps.

Sheldon Axle Company, Wilkes-Barre, Pa.—Axles and springs for power-propelled and horse-drawn vehicles.

Smith & Company, New York—Automobile and carriage color varnishes, etc.

Standard Varnish Works, New York and Chicago—Quick finishes for automobile and carriage bodies.

Swinehart Tire & Rubber Company, Akron, O.—Motor buggy tires, clincher and flange truck tires, etc.

Western Spring & Axle Company, Cincinnati, O.—Comprehensive line of springs and axles for both auto and horse-drawn vehicles.

Woll & Sons Manufacturing Company, Philadelphia, Pa.—All grades of curled hair for automobile and carriage upholstery.

Big Plans for Hartford Show

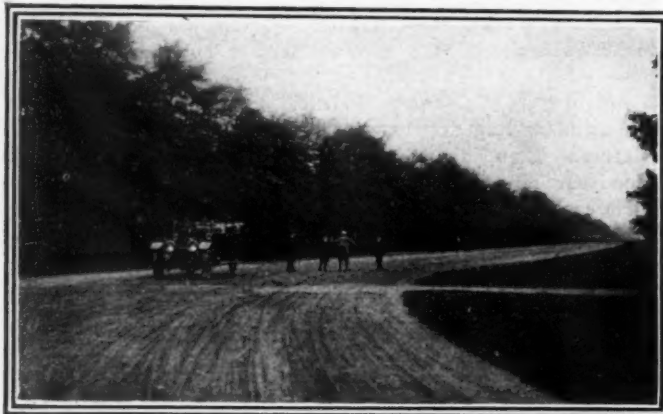
HARTFORD, CONN., Oct. 2—The Automobile Club of Hartford has decided to hold its 1912 show February 19 to 24, in the new state Armory, which has a larger floor area than Madison Square Garden. The main floor of the big hall gives an area of over 50,000 square feet for the exhibit of cars and accessories, while there are numerous side rooms, drill rooms, etc., which bring the total available space to practically 65,000 square feet.

The tentative decoration plans call for a big outlay of money. To place the sky bunting over the vast iron-girded ceiling will cost alone about \$1,000. The whole hall will be profusely decorated. The outlay of the spaces call for a wide aisle on the four sides of each exhibit.

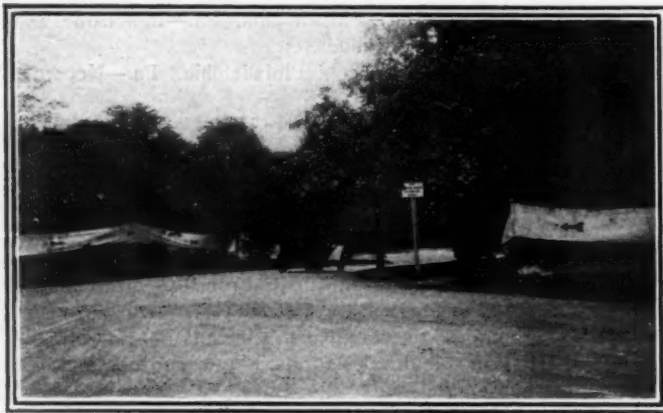
The work on the show has already started under the direction of Fred W. Dart and E. G. Biddle, and as soon as the sanction is received the plans will be rapidly pushed ahead.



Showing the wide and level home stretch, with stands on either side



First turn after leaving the start—grandstand in the distance



At the top of the sinuous Sweetbrier Hill—note large direction signs



Half-way down Sweetbrier Hill, the most dangerous place on the course

Fairmount 200-mile

PHILADELPHIA, Oct. 3—The entry list of the Fairmount Park road race closed at midnight last night and although the total falls eleven shy of the limit set by the Contest Committee of the Quaker City Motor Club, and thirteen below the number participating last year, the contest is expected to be none the less thrilling on that account and indications point to all attendance records being broken. There are nineteen cars entered, representative of eleven separate makes.

Five last-minute entries were made yesterday: two Bergdolls, an Ohio, a Mercedes and a Fiat.

Preliminary practice trials are being held each morning between sunrise and 7.30, twelve drivers having had their cars out this morning, quite a large crowd being present to look on. A heavy rain put a quietus on the spins Monday morning, the track being very soft, and although five drivers were on the ground, none ventured the heavy going. These trials will continue every morning until the day of the race.

The race long since ceased to be strictly a local affair, and visitors are expected from not only all over Pennsylvania, but from many of the adjoining States as well. Of course, there is no way by which an accurate count could be made of the thousands upon thousands that line both sides of the 8-mile course from one end to the other and that storm the turns where thrills may be expected, but putting last year's attendance at approximately 500,000, judging by the increasing interest this classic takes on yearly, it is not overstating the facts to say that 750,000 will see next Saturday's race.

Reserved seats and boxes have been eagerly snapped up almost as soon as placed on sale and the advance demand for parking spaces has been unprecedented. Proceeds of the race are divided equally between several of the city's charitable and philanthropic institutions.

Police regulations governing the course will, as in former years, be adequate, the number of guardians on duty numbering at least 2,000. Officers will be stationed about 20 feet apart, with an augmented guard at the turns. At points regarded as dangerous and at particularly sharp curves, the rule keeping spectators at a safe distance from the road, in some instances from 25 to 50 feet back, will be strictly enforced.

Regarding the race itself, many old favorites will be seen, with a liberal sprinkling of drivers who have become famous on other tracks. But there is an additional curiosity attached to the veterans of other Fairmount Park races this year in that few of them will be identified with the cars with which it has become the habit of associating them.

Thus, Len Zengel, who piloted a Chadwick to victory last year in the closest race ever witnessed here, will be at the wheel of a National. Ralph Mulford, the runner-up last fall, will as then drive a Lozier, but rumor has it that he will be found at the wheel of another make before long. Harry Grant, twice winner of the Vanderbilt cup, will also drive a Lozier, with which car he has been identified since the American Locomotive Company dropped racing. Erwin Bergdoll is about the only other driver who will use the same car, he having again nominated the Benz. Newcomers include Charles Basle, Cole; Lee Oldfield, Fiat; Joe Jagersburger, Case; Gil Anderson, Stutz; Harvey Ringler and Hughie Hughes, each driving a Mercer, and many others.

Cars will run in five classes, divisions 2-C, 3-C, 4-C, 5-C and 6-C, a prize of \$1,000 is hung up in each, with a grand prize of \$2,500 for the car making the best time. In addition this year prizes of cash will be awarded by the Remy Magneto Company to the first, second and third cars, Remy-equipped, in the

Will Draw Big Crowd

various divisions. Findeisen & Kropf, on behalf of the Rayfield carbureter, have offered \$200 in each of the classes for winning cars carrying Rayfield carbureters.

Contest will start at 12 o'clock noon. The course covers about 8 miles, the start and finish being at Memorial Hall, around Sweetbrier Hill, north on the West River Drive, to city line, to Belmont avenue, to start.

The complete classified list of entries is as follows:

Division 3-C—231 to 300 Cubic Inches Piston Displacement					
Car.	Bore.	Stroke.	Entrant.	Driver.	
Ohio	4 15/32	4 3/4	Ohio Motor Car Co.	S. H. Matthews	
Ohio	4 15/32	4 3/4	Ohio Motor Car Co.	George P. Parker	
Cole	4 1/2	4 1/2	Cole Motor Car Co.	Charles Basle	
Mercer	4 3/4	5	Mercer Automobile Co.	Harvey Ringler	
Mercer	4 3/4	5	Mercer Automobile Co.	Hughie Hughes	
Case	4 3/4	5	Case T. M. Co.	Joe Jagersberger	
Bergdoll	4	5 15/16	Grover Bergdoll	Grover Bergdoll	
Bergdoll	4	5 15/16	Charles Bergdoll	Charles Bergdoll	
Division 4-C—301 to 450 Cubic Inches Piston Displacement					
National	5	5 11/16	Weldon & Bauer	Harry Koopman	
National	5	5 11/16	Tioga Automobile Co.	Donald Herr	
Stutz	4 3/4	5 1/2	Ideal Motor Car Co.	Gilbert Anderson	
Division 5-C—451 to 600 Cubic Inches Piston Displacement					
Lozier	5 3/4	6	Lozier Motor Co.	Ralph Mulford	
Lozier	5 3/4	6	Dr. W. H. Chambers	Harry Grant	
Mercedes	5.1	7.1	Boulevard Garage	Spencer Wishart	
National	5	7 1/4	National Mot. Veh. Co.	Len Zengel	
Mercedes	130mm.	132-135mm.	Ed. J. Schroeder	Willie Wallace	
Division 6-C—601 to 750 Cubic Inches Piston Displacement					
Fiat	130mm.	190 mm	J. Fred Betz, 3d.	J. Fred Betz, 3d.	
Benz	155mm.	160mm.	Erwin R. Bergdoll	Erwin R. Bergdoll	
Fiat	130mm.	190mm.	Frank S. Hodson	Lee Oldfield	

L. I. A. C. to Attend Fairmount Race

BROOKLYN, N. Y., Oct. 2—Extraordinary preparations are being made by the Long Island Automobile Club to attend the forthcoming road race at Fairmount Park, Philadelphia. The club has arranged for a special train over the Central Railroad of New Jersey, leaving New York at 8:50 o'clock in the morning, October 7, and reaching the park at 11:15. Present indications point to a delegation of at least 100. Accommodations in one of the grandstands are the subject of negotiations, and if these are secured the Brooklyn party will be kept together during the running of the race.

The return trip will be from the Reading terminal at 7 o'clock, and the train is scheduled to arrive in New York at 9 o'clock.

Massaging Grand Prix Course

SAVANNAH, GA., Oct. 2—Work on the course to be used for the four big road races next month is progressing satisfactorily. The new paving which joins Norwood and La Roche avenues and upon La Roche avenue to Dale avenue and through the latter to Waters road has been completed. Waters road will probably be finished in two weeks and the rest of the circuit will then be taken in hand.

Whitfield, Ferguson and Norwood avenues constitute the bulk of the uncompleted work, but the whole course should be finished and in better condition than ever before by November 5.

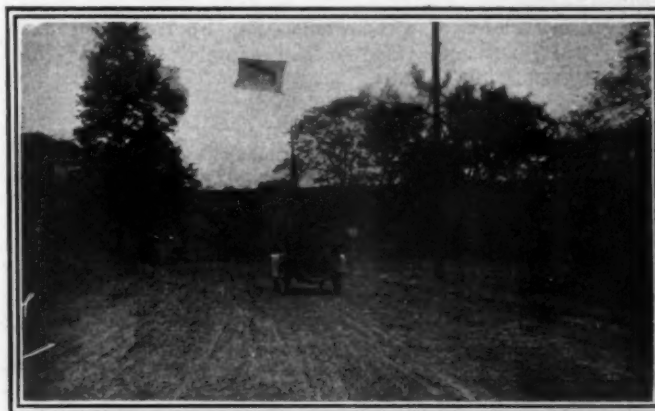
Some of the drivers who will take part in one or more of the races are as follows: Bruce-Brown, Parker, Tetzlaff, Nazarro, Bragg, Hemery, Burman, DePalma, Knipper and Hearne.

The Fiat company will have a team of five; the Benz company, three; Cole, three, and various other companies will be represented by from one to four cars. Definite formal entries for the events are not numerous so far.

It is estimated that there will be about eight cars in each of the light car races and twenty-five cars in the Vanderbilt Cup. The Grand Prix estimate is placed at twenty cars.



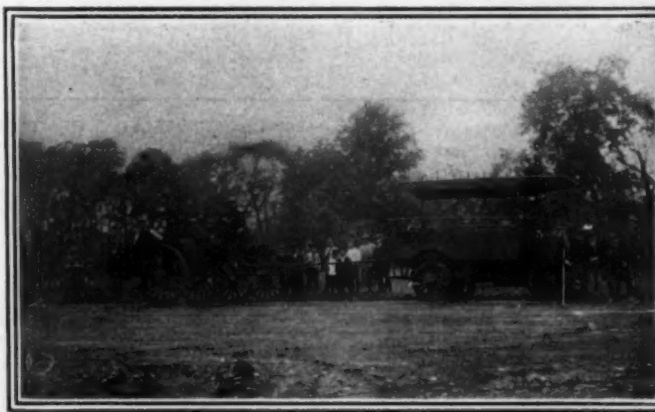
At the foot of Sweetbrier Hill—making the turn into the West River Drive



West River Drive, with bridge spanning roadway and Schuylkill



52d Street entrance, where course leaves Park and follows a city street



Stretching the ropes with the aid of a hose reel drawn by an Autocar truck

Glidden Tour to Have 83 Starters

WITH a total list of 83 cars, the Glidden Tour of 1911 will start on its journey Saturday morning, October 14, from a point on Fifth avenue, probably in front of the new public library. There will be 73 cars in the contesting column, but the make-up of the various teams has not been crystallized so far.

The main trophy will be awarded to the team with the least number of demerits at the conclusion of the tour and penalties will only be imposed for lateness at controls. The daily schedules are easy as far as mileage is concerned, and but for bad weather it would appear that a large number of clean scores must result. However, no allowance will be made for tire troubles and in case of bad roads aggravated by bad weather the clean score list will be reduced materially.

The complete entry list is as follows:

Entrant	City	Car
C. S. Winn	Atlanta	1912 Flanders
John S. Cohen	Atlanta	1912 White
J. H. Marsteller	Roanoke	1910 Chalmers
C. S. Nolan	Jacksonville	1912 Cadillac
U. S. Motor Co.	Tarrytown	1912 Maxwell
U. S. Motor Co.	Tarrytown	1912 Maxwell
U. S. Motor Co.	Tarrytown	1912 Maxwell
E. P. Ansley	Atlanta	1911 Pierce-Arrow
C. H. Johnson	Atlanta	1912 Stevens-Duryea
H. M. Grant	Atlanta	1911 Marmon
H. B. Race	Jacksonville	1910 Cole
W. J. Hillman	Live Oak	1912 Cadillac
W. E. Aycock	Moultrie	1910 Knox
J. R. Sandlin	Jasper	1912 Cadillac
R. D. Drysdale	Jacksonville	1911 Cadillac
Hoke Smith	Atlanta	1912 Maxwell
Studebaker Corp.	Detroit	1912 Flanders
Studebaker Corp.	Detroit	1912 Flanders
Studebaker Corp.	Detroit	1912 Flanders
C. J. Hood	Commerce	1911 Columbia
Frank Hardart	Philadelphia	1911 Winton
H. M. Atkinson	Atlanta	1908 Packard
William D. Alexander	Atlanta	1911 White
D. H. McMillan	Jacksonville	1912 Cadillac
Inman Gray	Atlanta	1911 American Traveler
James R. Gray	Atlanta	Thomas
Henry Tift	Tifton	Rambler
Streator M. C. Co.	Albany, Ga.	1911 Halladay
C. E. Fryer	Albany, Ga.	1911 Halladay
D. P. De Berry	Albany, Ga.	1911 Halladay
Metz Company	Waltham, Mass.	1912 Metz
Metz Company	Waltham, Mass.	1912 Metz
Metz Company	Waltham, Mass.	1912 Metz
Crawford Wheatley	Americus, Ga.	1912 Stevens-Duryea
Anderson Ad Club	Anderson, S. C.	1912 Mitchell
Atlanta Ad Club	Atlanta	1912 Corbin
R. S. Hall	Ocala, Fla.	1912 Cadillac
J. Epps Brown	Atlanta	1911 Thomas
H. P. McNeil	Jacksonville	1912 Cadillac
St. E. Massengale	Atlanta	1912 Garford
Griffith Imp. Co.	Athens, Ga.	1912 Schacht
L. C. Brown	Athens, Ga.	1912 Mitchell
P. D. Sandlin	Jasper, Fla.	1912 Cadillac
Bishop and Varner	Athens	1912 Maxwell Mercury
Jacksonville Metropolis	Jacksonville	1912 White
L. C. Denmark	Jacksonville	1912 Cadillac
R. S. King	Arcadia, Fla.	1912 Cadillac
Carolina Port, Cem. Co.	Atlanta	1911 Ford
E. M. Willingham	Atlanta	1912 Ford
I. O. Teasley	Alpharetta, Ga.	1912 Ford
C. M. McCardle	Indianapolis	1911 E-M-F
Athens M. C. Co.	Athens	1911 Columbia
J. H. Drennan	Newark, N. J.	1912 Packard
J. S. Shingler	Ashburn, Ga.	Cadillac

Entrant	City	Car
Martin and Rees	Hahira, Ga.	Cadillac
Winston-Salem B. of T.	Winston-Salem	Mitchell
Cordele, Ga.	Cordele	Oldsmobile
Cordele C. of C.	Cordele	Oldsmobile
Joseph M. Downing	Nashville, Tenn.	Marathon
R. L. Dozier	Nashville, Tenn.	Marathon
Vernon Hutton	Nashville, Tenn.	Marathon
Board of Trade	Decatur, Ga.	Flanders
E. Rivers	Atlanta	Pierce-Arrow
W. N. Stinson	Jacksonville	Oldsmobile
E-M-F Atlanta Co.	Atlanta	Flanders
Brooks Morgan	Atlanta	Stevens-Duryea
Asa G. Candler, Jr.	Atlanta	Lozier
Roberts Motor Co.	Jacksonville	Flanders
I. M. Powell	Cordele	Oldsmobile
Krit M. C. Co.	Detroit	Krit
Lindsey Hopkins	Greensboro, N. C.	Overland
Chamber of Commerce	Greensboro	Case
A. H. Whiting	New York	1912 Cunningham (Pacemaker)
Ray M. Owen	New York	1912 Reo (Official car)
Ray M. Owen	New York	1912 Reo (Official)
Velie M. V. Co.	Atlanta	Velie (Press car)
R. M. Owen	New York	Reo Truck (Baggage)
Chalmers M. Co.	Detroit	Chalmers Six (Press car)
C. W. Kelsey Mfg. Co.	Hartford	Motorette (Non-contest.)
C. W. Kelsey Mfg. Co.	Hartford	Motorette (Non-contest.)
C. W. Kelsey Mfg. Co.	Hartford	Motorette (Non-contest.)

Buckeye Suggests Good Roads Plan

COLUMBUS, OHIO, Oct. 2.—State Highway Commissioner James R. Marker advocates co-operation on the part of the State and Federal Government as the best means to secure good roads.

He favors making provision in the coming constitutional convention for authority by the State to issue bonds to the amount of \$5,000,000 annually. Such an outlay within fifteen years would give the State a perfect system of roads.

Commissioner Marker contends it would be far more beneficial for the Federal Government to put its spare millions into good roads instead of dumping it into the army and navy. In Ohio there are 90,000 miles of highway, 50,000 miles of rural free delivery and 8,000 miles of roads which would fit into an inter-county system.

Garford Train Starts to Los Angeles

Equipped for a transcontinental tour, four Garford touring cars and a baggage truck started from New York on Monday, headed for Los Angeles. These cars were joined at Albany Tuesday by a fifth touring car which started from Boston. When the party has progressed westward as far as Cleveland, another baggage truck will join the caravan. There are twenty-five passengers riding on this automobile train.

According to schedule, the train will reach Los Angeles in 51 days. The rate of fare is \$875, which averages \$16 a day covering everything. Raymond & Whitcomb are responsible for the venture. A. L. Westgard is in charge.

DAILY ITINERARY OF THE GLIDDEN TOUR OF 1911

A.M.	Start.	Noon Stop.	Mileage to Noon Stop.	Night Stop.	Daily Mileage.	P.M.
Oct. 14	New York	Trenton		Philadelphia	95.1	Oct. 14 Sat.
Oct. 15	Philadelphia	Lancaster	66.4	Gettysburg	120.1	Oct. 15 Sun.
Oct. 16	Gettysburg	Winchester	88.3	Staunton	182.3	Oct. 16 Mon.
Oct. 17	Staunton	National Bridge	52.1	Roanoke	90.8	Oct. 17 Tues.
Oct. 18	Roanoke	Martinsville	60.9	Winston-Salem	124.3	Oct. 18 Wed.
Oct. 19	Winston-Salem	Salisbury	89.6	Charlotte	135.6	Oct. 19 Thur.
Oct. 20	Charlotte	Spartansburg	90.7	Anderson	160.6	Oct. 20 Fri.
Oct. 21	Anderson	Commerce	64.3	Atlanta	144.2	Oct. 21 Sat.
Oct. 22	Atlanta		(Sunday stop-over)			
Oct. 23	Atlanta		(Monday stop-over)			
Oct. 24	Atlanta	Macon	103.3	Cordele	167.5	Oct. 24 Tues.
Oct. 25	Cordele	Valdosta	90.2	Live Oak	149.1	Oct. 25 Wed.
Oct. 26	Live Oak	(none)		Jacksonville	85.0	Oct. 26 Thur.

Total mileage, 1454.6

Late Trade and General News

CHICAGO, Oct. 2—Sidney S. Meyers, chairman of the creditors' committee of the Maytag-Mason Motor Co., Waterloo, Iowa, has issued a statement to the creditors, requesting them to submit proof of debts to said company, so that the affairs of the company and the interest of the creditors can be placed within the jurisdiction of the United States district court.

This creditors' committee, appointed to investigate, found on July 1 assets, plant, equipment, merchandise, and all other ascertained assets to the extent of \$331,000. At that date the direct liabilities on bills and accounts payable were \$367,978.08. Contingent claims alleged to be due for breach of contracts and for other causes amounted to \$70,000, making a grand total of liabilities of \$437,978.08. Two-thirds of the actual assets are represented by unfinished motor car parts. It is estimated that the shrinkage in the value of these parts will be two-thirds of the book value.

There has been submitted by the company a tentative proposition of 33 1-3 per cent. for the unsecured claims, provided there shall be concluded a contemplated arrangement with Senator Maytag by which he shall take care of the secured claims.

Colonels Win Lamp-Sign Fight

LOUISVILLE, Oct. 2—On motion of A. Scott Bullitt, County Attorney, the cases against Louisville motorists, charged with violating section 4 of the State automobile law, requiring that the number of the State license be displayed on the lamps of the cars, were dismissed Thursday in Magistrate Vogt's court. Mr. Bullitt declared that, inasmuch as the Secretary of State had informed members of the Louisville Automobile Club that they need not observe that section of the law, and as no subsequent warning had been given the owners of motor cars, all cases should be dismissed.

The executive committee of the Louisville Automobile Club met before the court and made preparations for the cases. Resolutions were adopted which provided for the making of a case to test the validity of the law.

International Show in Berlin

BERLIN, Sept. 24—The first automobile show in Germany for 4 years will open in Berlin on October 12 and continue for 10 days. The show will be held under the auspices of the Imperial Automobile Club. The motor industry of eight countries—France, Germany, England, Belgium, Sweden, Switzerland, Italy and the United States—will be represented on the floor of the big exhibition pavilion.

More than 270 exhibitors have taken space and 67 factories will have cars on view; almost every model and type of car, both pleasure and truck, will be shown.

Mud Stalls Winnipeg Contestants

WINNIPEG, Oct. 2—Over 200 miles of road, saturated with rain and buried in mud, the fourth annual contest for the Oldsmobile Endurance trophy was run last week. In addition to this amount of rough going the route contained another 200 miles of pretty passable thoroughfare. The run was commenced Wednesday morning and while its completion was scheduled for the following night, some of the cars have not arrived back in the city.

The award of the judges will not be made until the technical

inspection is completed this week. The cars returned in the following order: Ford, Paterson, Reo, Velie, Halladay, Empire, Chalmers and Hupmobile. The unaccounted cars are: Reo, Whiting and Halladay.

A. C. Emmett was pathfinder and Dr. F. W. Glasgow, judge.

Hoosiers Choose Their Directors

INDIANAPOLIS, Oct. 2—Directors of the newly organized Hoosier Motor Club, were elected at a meeting held at the Claypool Hotel in Indianapolis, on the night of September 30. Officers are to be elected on the evening of October 5, and temporary club rooms will be established in the Claypool Hotel. Directors of the new club are Charles A. Bookwalter of the Mais Motor Truck Company; H. H. Rice, of the Nordyke & Marmion Company; Charles W. Sedwick; H. O. Smith, president of the Premier Motor Manufacturing Company; Bert A. Boyd; C. L. Diers, of the Goodyear Rubber Company; Joseph W. Selvage, Homer McKee and Hiram Brown. There are about thirty-five charter members.

Harking Back a Decade

IN the issue of October 3, 1901, of *The Motor Review*, the following items were given prominence:

The First Annual Automobile Exhibition, under the auspices of the Chicago Automobile Club and the National Association of Automobile Manufacturers has been definitely fixed for March 1-8, 1902, at the Coliseum. This event will be the third automobile show to be held in Chicago.

Announcement is made that the E. R. Thomas Motor Company, of Buffalo, has disposed of its motorcycle business to the Auto-Bi Company. The latter agree to use Thomas motors for its product. E. L. Ferguson is named as sales manager.

The annual meeting of the N. A. A. M. is set for November during the Madison Square Garden show.

Washington, D. C., Sept. 28, 1901—The first call for bids to furnish motor vehicles to the postal service has been made. The subject matter of the proposals was the equipment of the Minneapolis department with five 1,000-pound wagons.

According to an executive order of the Secretary of the Treasury, exports of automobiles will be made a separate head in the monthly reports of exports. Such exports have been included under the general heading, "all other carriages."

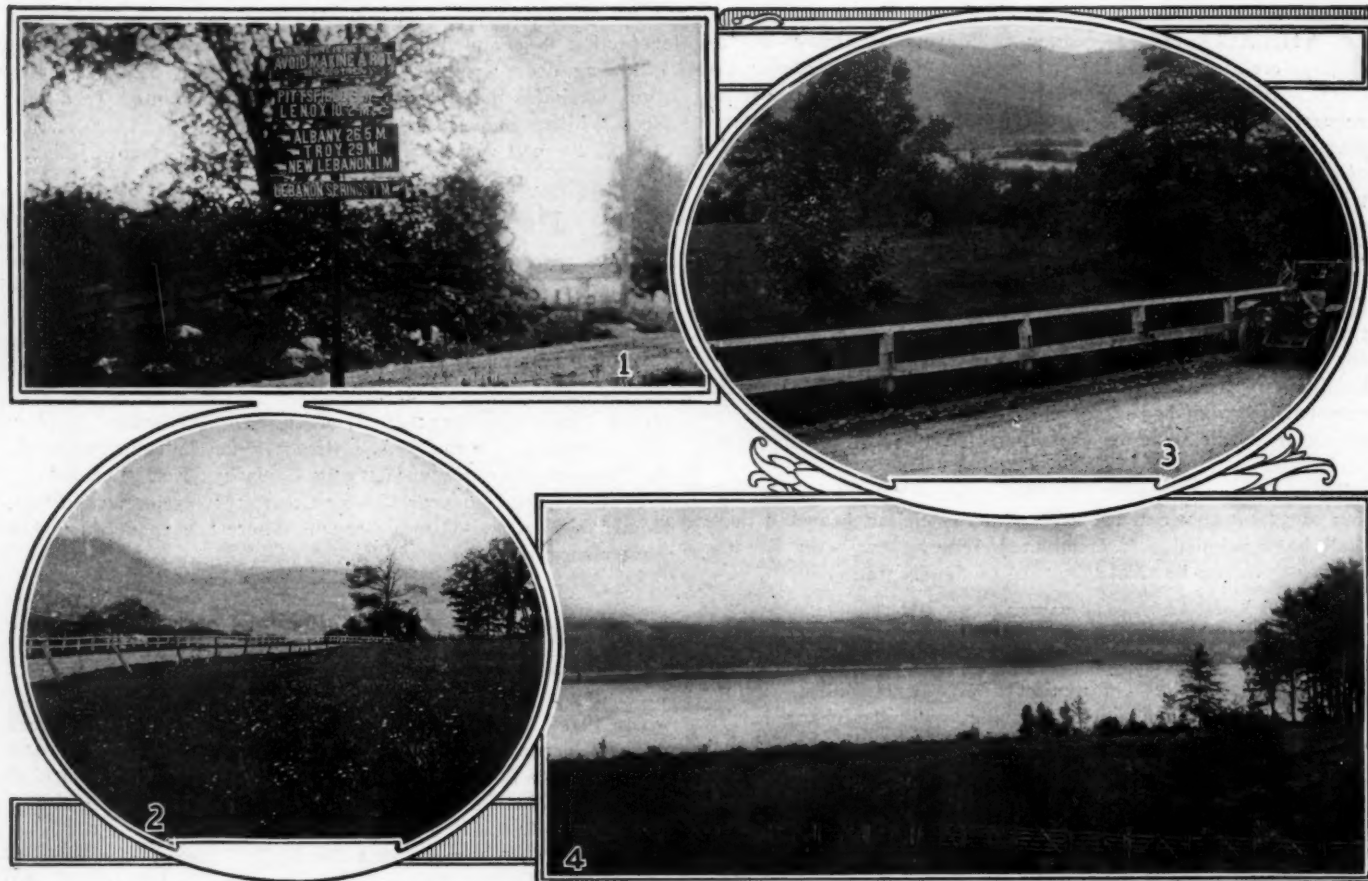
At the Fort Erie race meeting Henri Fournier in a Mors car broke the world's record for 25 miles on a circular dirt track, making the distance in 31:58 2-5. He also broke the mile record, flying start, in 1:13 1-4.

The Lane Motor Vehicle Company, of Poughkeepsie, N. Y., sent a letter of protest to the editor, objecting to the reports of the New York-Buffalo endurance test on the ground that they did not go into mechanical details.

Bad roads are the subject of the leading editorial of the week and the experience of entrants on the endurance run is cited as an example of their condition in New York State. The roads beyond Albany are referred to as swamps.

C. C. Bramwell, in the feature article of the week, tells of the lessons to be learned from the endurance run. He said that the roads were worse than expected and blamed their condition on the farmer. He also calls attention to the practice of allowing manufacturers to enter as many cars as they please to the detriment of some of the smaller concerns that can enter but one or two cars.

Berkshire Hills in Autumn Splendor



1—Comprehensive road signs are scattered along where needed

2—Road over Lebanon Mountain, just east of Massachusetts line

3—Just a glimpse toward the southern hills from Pittsfield

4—A shimmering lake, high in the hills near Lenox

“WHEN the frost is on the punkin” there is no more beautiful section of the globe than the Berkshire Hills of Massachusetts.

Jack Frost, the master painter, does his inimitable work with the delicate hand of the artist. He avoids the bold line-work of the impressionistic school without losing an atom of its coloration. He selects a single tree, set in a galaxy of green, and in one night converts it from tender, verdant greenery into a blazing focus for the center of his picture, lighting up a whole mountainside with the brilliant yellows and glowing reds and touches here and there a spot with his Autumnal pigments to make the contrast more inspiring.

Long before the valleys and low-lying sections feel the breath of frost the Berkshires are aglow with brilliance like unto nothing to be met with elsewhere.

A leisurely trip through this section, using an automobile for conveyance, so that one may select his own points of view and loiter along if he so wishes, will repay whatever it costs a thousandfold.

There is everything to be found along the way in the whole category of scenery. From some of the hilltops the giant vistas through the rich valleys deserve the inspired efforts of the poet; the rugged mountains, softened here and there where the pine trees have smoothed out the harshness of their granite walls, are marvelously virile despite their miniature size as compared with the towering peaks and bleak aspect of the Sierras and Rockies; the little lakes and streams, clear as crystal, tumble

noisily toward the ultimate ocean and lend a delightful variation to the picture panorama unfolded before the appreciative sight of the tourist; and the long, winding grades that lead to the lower levels complete the scene that has no equal in this part of the continent, if it has anywhere.

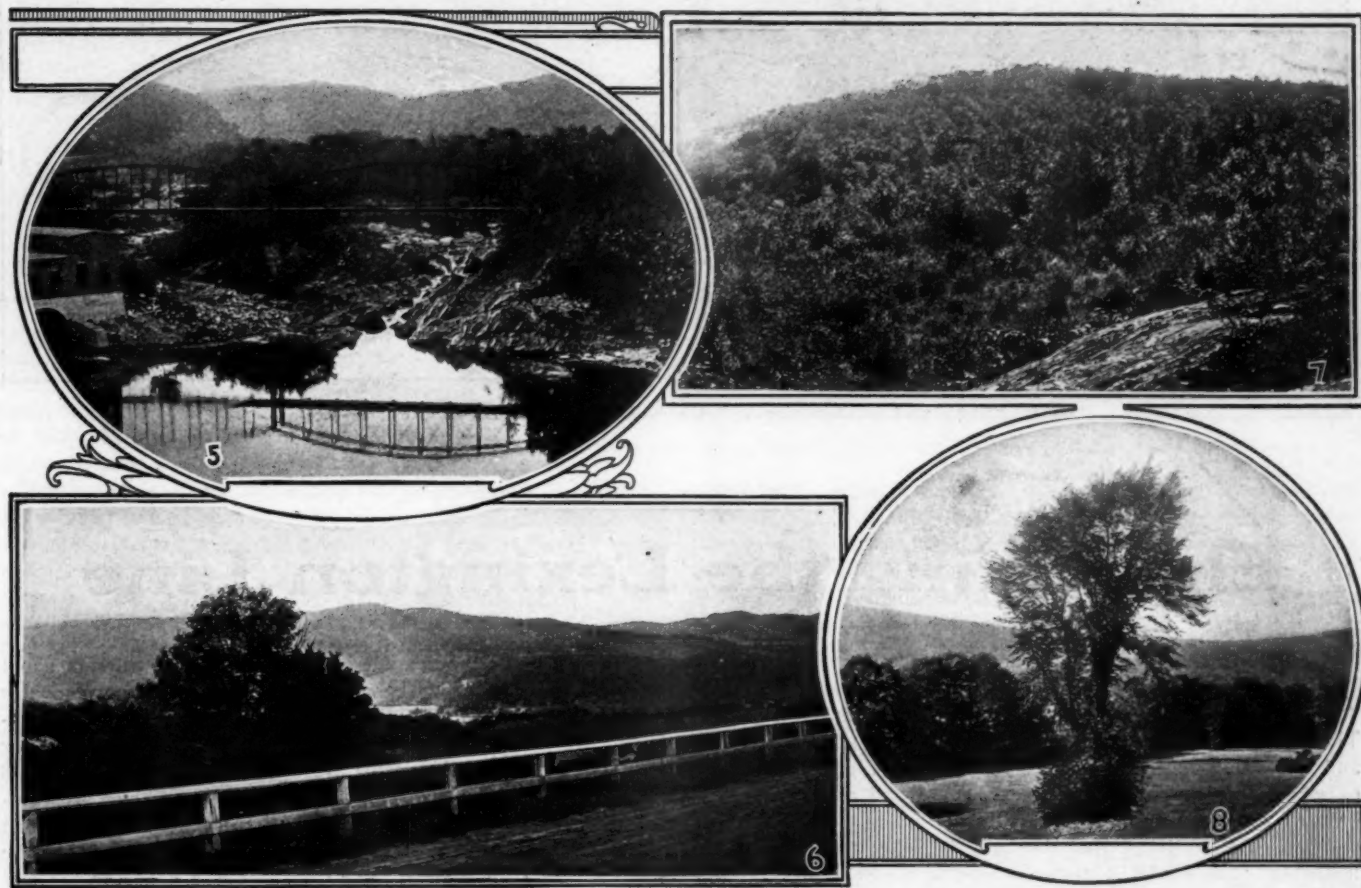
As the stage setting for an autumn honeymoon en automobile, the Berkshires are ideal. As a restful trip for the family, there is nothing like it to be found hereabouts. As a short respite for the businessman, it has everything that is necessary.

Given a good car, harmonious party and the present delightful first scene in the annual Indian Summer, and the perfect roads of New York and Massachusetts will do the rest.

Starting from Albany, full details of the course having been received from the Albany branch of the Touring Club of America, which is located in spacious quarters in the Hotel Ten Eyck, the party proceeds eastward, crossing the river and heads for the blue foot-hills. There are a number of pretty detours that may be made before reaching Lebanon Mountain, which is close to the Massachusetts State line, but these are not important unless the party wishes to spend a comparatively long time in the tour.

Climbing Lebanon Mountain is a delight, long to be remembered if the new state road that skirts the hillside is used in making the ascent. The grade is stiff, but not unduly trying to any modern automobile. At the crest of the road, the party passes into Massachusetts. The transition is not marked by any radical change in road conditions, for where one state leaves

Offer Unusual Touring Opportunities



5—Spidery bridges give an Alpine tinge to the landscape

6—Varied scene typical of the section near Stockbridge

7—Granite ribs of the earth's body occasionally protrude

8—Greensward, hill and dale, on the way toward Pittsfield

off, the other picks up the work on similar lines and unless one noticed the signs that proclaim the state lines, the passage from one to the other would not be noticed.

From this point eastward lie the Berkshires and the run from Lebanon Mountain to Pittsfield is one of continuous beauty and change. It is only a short run in miles from Albany to Pittsfield, but it should be long in time because it deserves it. Fast time can be made for the roads are very perfect and magnificently kept, but it would almost seem like sacrilege to open up the throttle and miss a single picture.

Further details as to detours and lovely side trips are available at the Pittsfield quarters of the Touring Club of America at the Hotel Wendell. Of course, one wants to go over the celebrated Jacob's Ladder where only a few years ago a whole Glidden Tour stalled helplessly on the hillside. Most of the rungs have been pulled out of the ladder as it stands at present and the grades will not puzzle the average car in the least. Looking back at the old road over which the Glidden cars eventually passed, the impression of a ladder rising to heaven is not hard to receive. The old road has been eliminated by carrying the main highway around the other side of the hill and bringing it down to the grade of the state road at an easier angle.

The average tourist would pass by the old ladder if he were not watching for it. To-day it seems like an abandoned road through the woods, overgrown with underbrush and almost pathetic in its isolation.

The summit is reached just beyond this point and is decked

with a monument around which are piled stones bearing the names and addresses of automobilists from every section of the land who have contributed more or less ornamental memorials to the monument.

From there clear to Springfield the way is general down grade and a slow, deliberate automobile trip will reveal more beauties to the mile than the vast majority of tourists even suspect of existence.

There is another station of the Touring Club of America at Springfield, located in the New Kimball, where road information for a continuance of the tour may be had freely. Connecticut affords a big and beautiful field; the northern central portion of Massachusetts is historic in interest and gorgeous in Autumn colors and dozens of other sections stand ready for exploration.

Just one word of repeated caution. Take your time, enjoy Nature in her most wonderful garb and when you get home again you will have an evergreen memory that contains nothing but delight.

Boost Good Roads with Bond Issues

SAN FRANCISCO, Sept. 26—The people of Glenn County, in northern California, have shown their appreciation of the benefits of good roads by voting road bonds to the amount of \$450,000, by a large majority of ballots. The bonds will be used for the building and improvement of 158 miles of roadway throughout the county, which is one of the smaller divisions of the State.

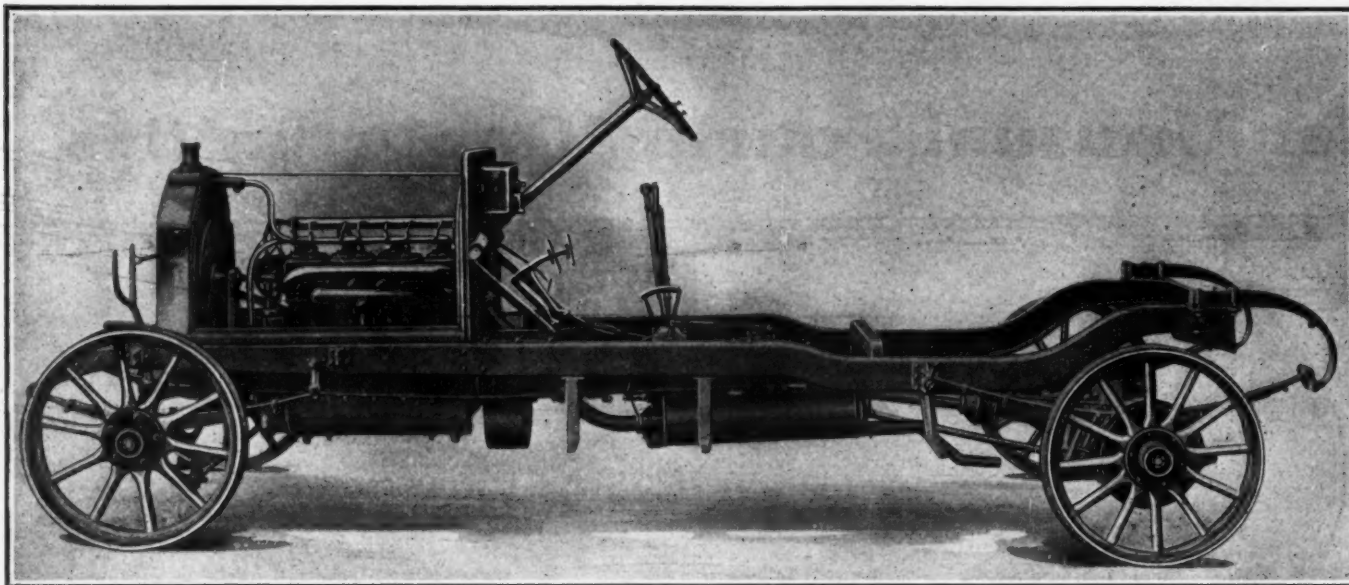


Fig. 1—Chassis used in connection with the Model F Lexington touring cars and coupé

Elucidating the Lexington Line

AMONG the most recent announcements of cars placed upon the market for the season of 1912 is that of the Lexington Motor Car Company, of Connerville, Ind. This company has confined its efforts to two styles of chassis and has fitted these with six styles of body, embracing five-passenger touring car, demi-tonneau, coupé and roadster types.

The two chassis are equipped with motors of different types, one being the Model X Rutenber and the other the Model R A Rutenber. The Model X motor is used in the D F touring cars and the Model E roadster in connection with the smaller chassis of the two. It is rated by the makers at 40 horsepower and has four single cylinders having a bore of 4 1-8 inches and a stroke of 5 1-4 inches. The inlet and exhaust manifolds N and M, Fig. 3, and the valves are located on the same side of the motor and are operated from the same camshaft. The cam

action is made very accessible by the fact that the fulcrum about which the valve lifter lever swings is attached to a removable cover plate. When this plate is removed the lifter and follower are withdrawn with it so that a close inspection for wear can be made. The cams are designed to give a lift of 3-8 inch to both the exhaust and inlet valves. The valves are composed of two different kinds of steel, according to the latest practice in valve-making; the heads are of nickel steel and the stems are of carbon steel. The camshaft is a drop forging and is supported by three plain bearings; it is driven off the crankshaft by means of the half-time gearing, which is located in a casing situated at the front end of the motor.

The pistons are long and are equipped with five rings, four being above the wrist-pin and one at the same level as the center of the wrist-pin. There are three grooves in the piston below

the wrist-pin, which pick up the oil that is thrown from the crankcase and distribute it to the cylinder wall. The wrist-pin is hollow and is supported by a bushing which is cast integrally with the piston. The connecting rod is attached solidly to the wrist-pin, which oscillates with the motion of the connecting rod and hence uses the bushing as a bearing surface. At the wrist-pin ends the connecting rods are fastened with clamp bolts, which are held in place and locked with washers and lock nuts.

The crankcase of this motor is cast in two entirely separate parts. The upper part carries the supporting arms for the motor, of which there are four, and also supports the five bridges which carry the main bearings. The lower parts of the bridges are removable, while the upper halves are integrally connected to the upper part of the crankcase casting. In the four front main bearings there are two supporting

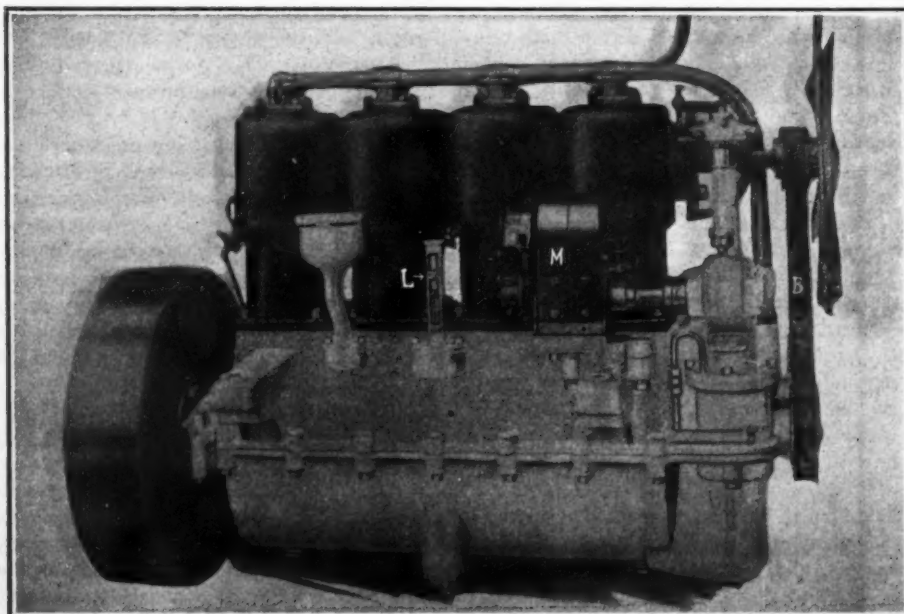


Fig. 2—Magneto side of Model R A Rutenber motor used in larger Lexington cars

bolts, while in the rear main bearing four bolts are provided to give ample protection against the vibration which may be caused by the flywheel. The lower part of the crankcase is not only free from the upper part, but is independent of all the bearings and gearing; hence it may be removed at pleasure without any fear of disturbing any of the moving parts of the motor. It is attached to the upper part of the crankcase by means of bolts, and when dropped, gives easy access to all the connecting rod and main bearings.

The manifolds are placed on the left side of the motor, one above the other. The lower of the two is the intake manifold. The carburetor is suspended from the center of the intake manifold, N, which is of Y-shape and flanged for the purpose of holding the carburetor, which is of the Schebler type. The flange which supports the carburetor is of large size in order to safeguard against a leak at this point.

The motor is cooled by water, the jacket space surrounding the valve chambers as well as the combustion space. The water circulation is maintained by a centrifugal type of pump, which is driven by gearing and by the same shaft that operates the magneto. The radiator is kept cool by a five-bladed fan which is driven off the end of the shaft by means of a belt and pulley. The bracket which holds the fan is adjustable.

The lubrication is a combination of the force-feed and splash systems. The oil reservoir is located in the lower part of the base casting, being contained beneath a horizontal partition which subdivides the base into an upper and lower compartment. The lower part furnishes the reservoir, while the upper part is a sort of tray carrying the splash troughs which are a factor in the lubrication system of the motor. The capacity of the reservoir is in the neighborhood of two gallons. A gear pump located at the front end of the motor in the bottom of the base chamber draws the oil from the crankcase through a wire-gauze screen and forces it through leads into the main bearings of the crankshaft. After the oil has passed through the main bearings it will overflow into the splash troughs on either side, and create a pool of oil in each of these troughs. At each revolution the ends of the connecting rods are dipped into these

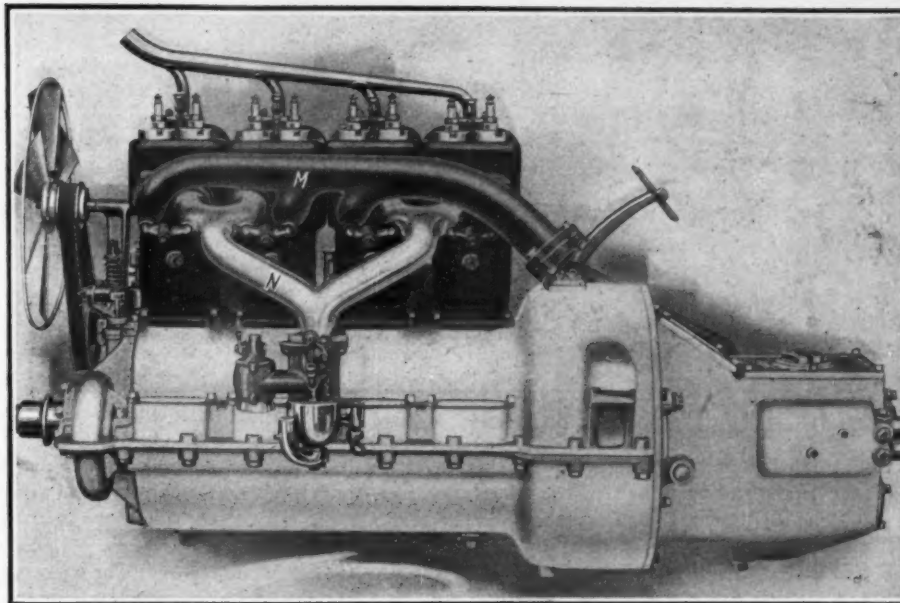


Fig. 3—Manifold side of the Model X Rutenber motor, used in the smaller Lexington cars

splash pools, creating a mist of oil which fills the crankcase and lubricates all the other bearings. The constant level is maintained in the splash troughs because the oil is supplied much more rapidly than it is used, and there is an overflow port provided so that when the oil rises to a certain height it will return to the reservoir. A float level gauge is fitted on the base.

The clutch is of the leather-faced cone type. It is made of aluminum and is recessed below the leather to accommodate 12 springs (M, Fig. 6) so inserted as to provide for easy engagement. The pedal which controls the clutch is adjustable for length to suit the requirements of the driver. The crankcase casting is carried back far enough to enclose the clutch; the gearset housing is then bolted on the end of the clutch casing, making a complete covering for both these parts. The combined housing for these two parts is illustrated in Fig. 6. An inspection cover C, held by the thumb nuts N, is fitted so that easy access may be had to the working parts. A plug L is provided for the insertion of grease into the gearset housing and the casing itself may be taken off by the removal of the bolts B which hold it in place. The gearset housing may be drained by means of a small drain plug located in the bottom of the housing at the front end. The male member of the clutch is

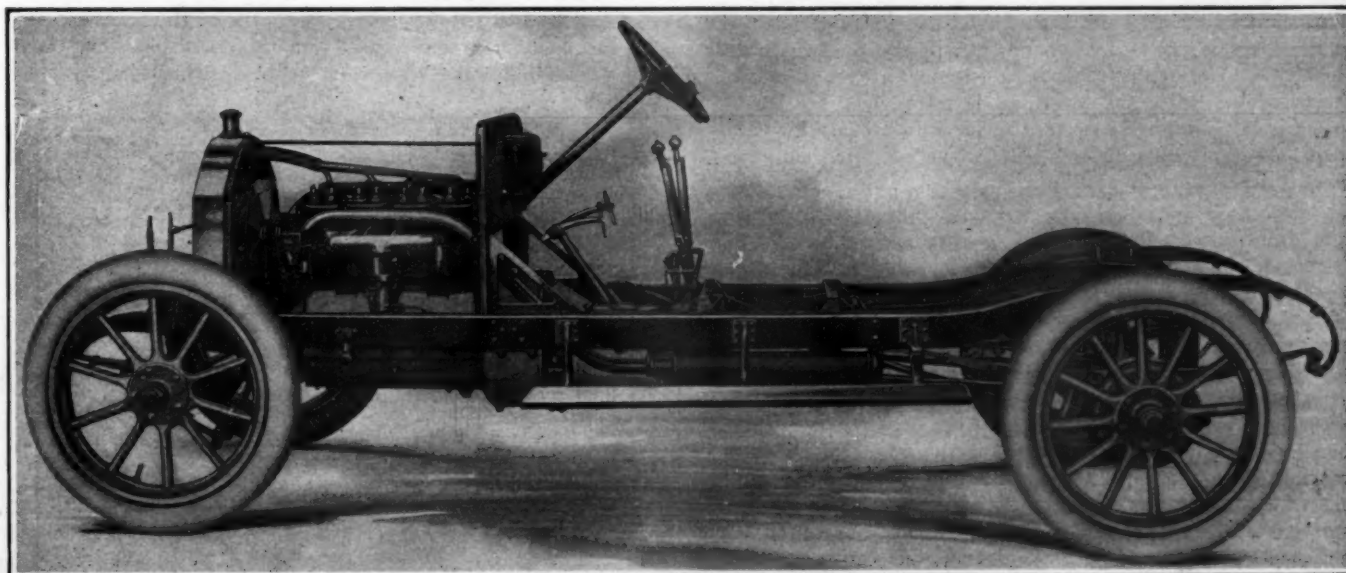


Fig. 4—Illustrating the chassis used in connection with Models D F and E Lexington touring car and roadster

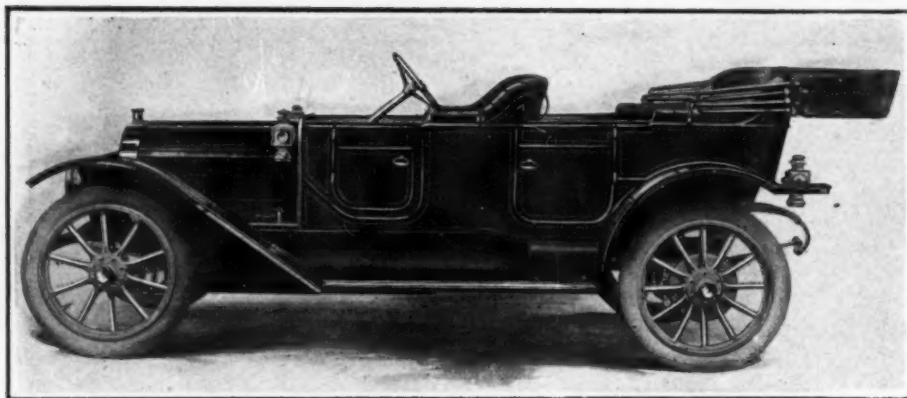


Fig. 5—Model F Lexington demi-tonneau, equipped with Model R. A. motor

held to the drive shaft by a fitting which passes over the squared end of the shaft and is bolted to the clutch by means of the bolts P. The drive shaft D, passes through a stuffing-box at the front end of the gearset housing and engages with the change-speed shaft E. By shifting the shaft E with the change-speed lever, three forward and one reverse speeds are obtained. The shafts are provided with ball bearings and there is a thrust bearing arranged to take the thrust from the clutch.

The drive is taken up beyond the gearset by the propeller shaft, which is fitted with a universal joint at either end, and thence passes through a stuffing box and roller bearing support into the differential. The differential is of the Timken type, a short shaft passing through two Timken roller bearings and terminating with a pinion which engages with the differential, this being also mounted on roller bearings. The rear half of the differential casing is removable by unscrewing the bolts which hold it in place. The bolts are kept tight by the use of split washers which are fitted both on the exterior and interior of the pressed steel housing. A plug for the purpose of inserting lubricating material and a drain are also provided. A flange to which the two triangular spring-mounted torque rods are fitted by means of bolts, is provided on the exterior of the differential housing.

The brakes are of the external and internal type, being mounted on a steel drum as shown in Fig. 8. The internal brakes are operated by the brake lever and form the means of braking the car in an emergency. The illustration shows the method of adjusting for wear and for drag. When the brake is applied the internal lever is drawn back and the two cams P, which are pivoted at P₁, are pushed together, thus applying the brakes. The spring shown in the illustration is fitted for the purpose of drawing back the brakes into their regular position when the lever is released. When the ordinary or foot brake is applied the exterior contracting band is drawn over the drum by means of the bell crank lever and is released by the spring when the pedal is allowed to return to its ordinary position. The drum is held in place by through bolts which are fitted with cotter pins to keep them in position.

The front axle is of the Timken type and is a solid I-beam section, drop-forged. The steering spindles are of alloy steel, heat treated. The rear axle is also a Timken product, being of the floating type revolving on roller bearings. It is enclosed in a housing of pressed steel and is of heat-treated alloy steel. The driving axles are squared at both the differential and wheel ends so that they may be easily withdrawn by removing the hub cap. When this hub cap is removed the end of the axle is exposed, and by inserting a special tool the drive shaft may be removed without disturbing any part of the wheel. The drive is transmitted to the wheels from the axle by means of steel fittings which pass over the end of the squared drive shafts and extend to the wheel flanges. The six bolts which connect the axles to the wheel pass through the brake drums, thus forming a very rigid and efficient connection. Just inside the roller bearings a bushing prevents the passage of oil into the brake drums.

The wheels are intended for 34 x 4-inch tires all around on the D F and E models. They are fitted with universal Q. D. rims and work on Timken bearings, both front and rear.

The chassis frame is of channel section throughout. It runs back on a straight line until it reaches a point about 2 feet forward of the rear axle, where there is a rise which terminates over the rear supports.

The bodies supplied with this chassis are of two types—the Model D F, a five-passenger touring car, and the Model E roadster. They are both supported on semi-elliptic springs at the front with a 2-inch offset center and at the rear with

three-quarter elliptic springs with a 2-inch offset. All the springs are steel bushed, reamed to size and fitted with grease cups. They are held in position with clips and tie plates. Both types of body are equipped with the worm and gear type steering gear. The steering column is fitted with an 18-inch hand wheel with aluminum center. The spark and throttle control quadrants and levers are located on the top of the steering wheel.

The equipment consists of a Bosch magneto, five lamps, pump, jack, tools, robe-rail, foot rest and generator. The color of the car and the upholstering are optional. The entire vehicle fully equipped without passengers weighs about 2,700 pounds.

Mechanical Details of Model F Chassis

The Model R A motor, which features the larger chassis, which is used in connection with the Model F bodies and the Lexington coupé, is also a Rutenber product. The bore is 4 1-2 inches and the stroke 5 inches. There are four separately-cast cylinders, as in the Model X motor. The inlet and exhaust valves are located on the same side of the motor and are operated off the same camshaft. The valve springs are on the exterior of the motor and are accessible to inspection and adjustment without the removal of any other parts. There are two nuts on the lower end of the exposed part of the stems by means of which the adjustment of the valves can be easily effected.

The cam action is made accessible by means of removable cover plates which are held in place by bolts. The camshaft is supported at three points in its length, the central point of suspension being in the same transverse plane as the central main bearing of the crankshaft. There are four cams on either side of this central support, which take care of the valve action of all the cylinders. The lower ends of the valve stems are equipped with followers, which rest upon the lifter fingers. The

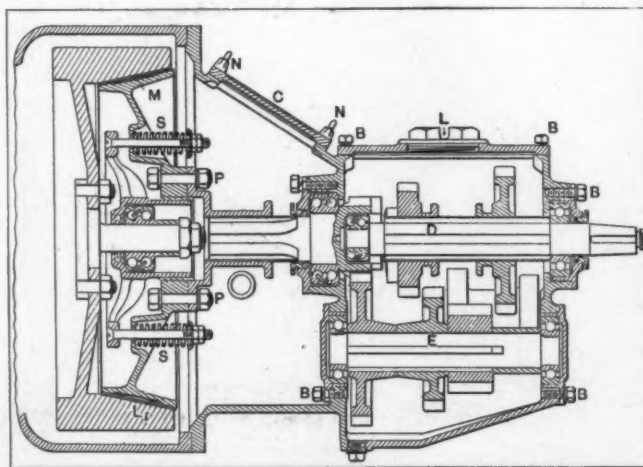


Fig. 6—Vertical section through the clutch and gearset

action of the cam is transmitted to this finger by means of a roller follower, which gives a lift of 3-8 inch to the valves. The valve-heads are of nickel and the stems of carbon steel.

The pistons are equipped with five rings in the same manner as the Model X motor. The connecting rods are clamped to the wrist-pins rigidly, and the bearing surface for the wrist-pin is provided by a bushing which is an integral part of the piston.

Carburetion is effected by means of a Schebler carbureter which is supported in the same manner as on the Model X motor.

The motor is lubricated by the splash system as well as by the oil which is forced to the main bearing by means of a gear-driven pump located in the front lower end of the base casting. This pump is surrounded by a screen, through which all the oil which is sucked up by the pump must pass. After being led to the main bearings the oil overflows into splash troughs and then passes back into the reservoir, which is located in the lower half of the base chamber. The crank bearings, camshaft bearings and all other moving parts receive their lubrication from the oil which is thrown up by the splash of the connecting rod into the pools of oil contained in the splash troughs. There are two independent methods of draining the crankcase. The upper part of the base chamber which contains the splash troughs is drained by one set of plugs, while the lower half or oil reservoir may be drained by another. The reservoir is fitted with a level gauge L, Fig. 2.

Ignition is affected by two systems which are entirely independent of each other, having separate spark plugs. There are hence two spark plugs in each cylinder. One system is operated by dry batteries and coil, while the other is taken care of by a Bosch magneto M. The coil for the dry batteries is located on the dash and is of the four-unit type. The magneto is located on the opposite side of the motor from the intake and exhaust manifolds and is driven off the same shaft as the centrifugal water pump.

The motor is cooled in the same manner as the model X, the fan driven by the belt B being made larger.

The flywheel is not encased in this motor, the crankcase terminating at the end of the crankshaft.

The clutch is of the leather-faced cone type, the metallic parts being identical with those used in connection with the smaller chassis. The clutch is controlled by adjustable pedal.

The gearset is of the type manufactured by the T. W. Warner Manufacturing Company. It is of the selective sliding gear type mounted on annular bearings supported by a sub-frame.

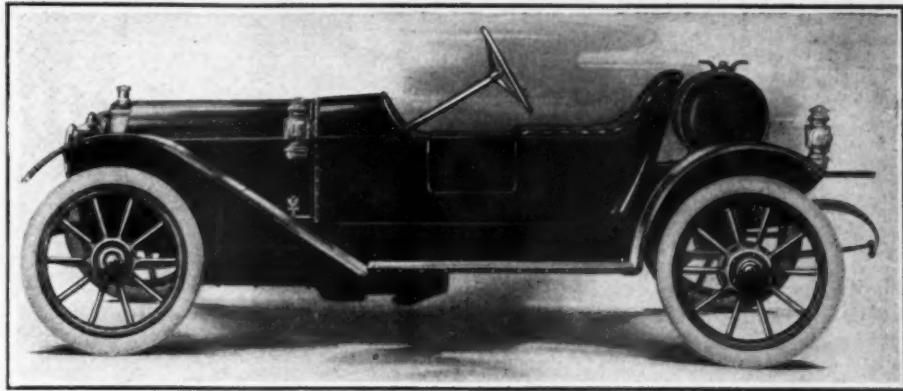


Fig. 7—Lexington Model E roadster, with tank mounted on the afterdeck

The propeller shaft is fitted with two universal joints in the same manner as that used with the Model X motor. Between the clutch and gearset there are also double universal joints so that all strains will be released. The torsional strains are taken care of by triangular torque members of tubular form. The front ends of the torque members are cushioned on heavy springs which are mounted on the cross member of the main frame, the rear ends being bolted to the differential housing.

The front and rear axles are both of Timken manufacture of the same general style as those described for the other type of chassis, but made heavier to sustain the added weight of the heavier motor and body. The other frame members are similar to those of the other chassis except that they are of double dropped construction and somewhat heavier.

The brakes are of the internal and external type, with drums which are 14 inches in diameter and 2 1-2 inches in width. They are bolted to the rear wheels and are adjustable for wear and play.

The bodies fitted with this chassis are of four varieties: two five-passenger touring, one with fore-doors and the other without; a demi-tonneau, and a coupé. They are all mounted in a similar manner with semi-elliptic springs with a 2-inch offset in front and in the rear with three-quarter elliptic springs having the same offset. All the spring eyes are fitted with hardened steel bushings and the bolts are hardened and ground. They are fitted with integral grease cups.

The steering gear is of the worm and gear type of the same general description as that fitted on the smaller cars.

The equipment consists of a Bosch magneto, horn, five lamps, pump, jack, tools, generator, 36 x 4 tires, robe rail, foot rest, and cocoa mat in tonneau. The color of the body is optional, as is also the upholstery.

In placing these two styles of chassis with the six types of body upon the market the Lexington company has not made any radical changes from the models presented in the season of 1911. There are a number of small refinements which have been incorporated in the new models, however, to bring them up to date. Either of the three touring cars is designed to fill the requirements of an every-day car for all-around use. The five-passenger touring cars furnished with the larger chassis are identical except that one is equipped with fore-doors while the other is not. The five-passenger touring car body fitted to the smaller chassis is equipped with fore-doors and is of the same general type as the larger cars except that it is smaller. The coupé, which is fitted on the larger chassis, is furnished with an extra folding seat placed to the left of the steering column so that an additional passenger may be accommodated. The demi-tonneau car is designed for five passengers and is supplied with the larger chassis. The principal differences between this car and the larger touring cars are the closer lines and the longer steering column, which is raked at a sharper angle. The remaining car, the roadster, is mounted on the smaller chassis and has been designed with the object of providing a racy appearance. *

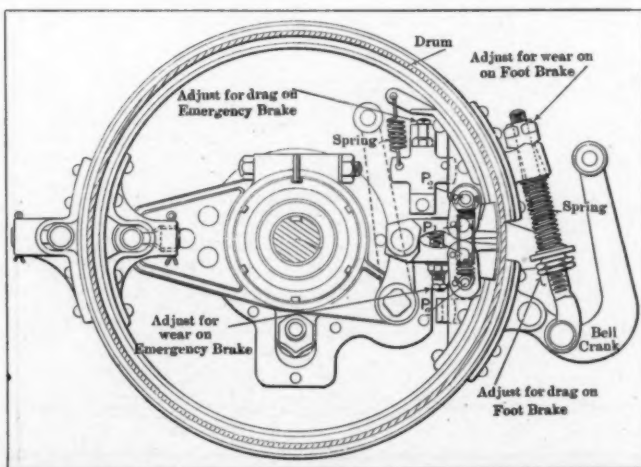


Fig. 8—Longitudinal section through the brake, showing methods of adjustment

AMONG the things that contribute to the pleasure of automobiling and that save wear and tear on the nervous system at a ratio that it is impossible to estimate, are the little things that keep within easy reach the tools and parts needed to make repairs, insure accessibility of the side curtains, etc. Extra cushions or pillows in the car, that can be used as foot rests or that can be utilized to bolster up the back, are another useful addition. More of these simple and useful things are to be found on the new models than ever before; the number is bound to be augmented, too, because the number of car users is increasing, and that means that more people will be interested in the weeding out of the makeshift system that so frequently obtains.

It is usually the novice who institutes reforms; the man who really knows succumbs to the prevailing conditions, whereas the new-comer protests vigorously at the sight that is presented when the occupants of the car are made to file out and stand on the road while the box under the rear seat is ransacked for inner tubes, side curtains, the jack or pump, or any old thing that does not happen to be provided with a home in some other part of the car or in the tool box on the running-board. Then, too, it may be raining at the time and this will add to the varieties of the sensations that are experienced.

Fortunately the refining process is making headway rapidly, and car-users with good common sense are beginning to have the old adage of "a place for everything and everything in its place" apply to the interior of a car as well as to any other piece of property that they may possess. The competition in making sales at the present day is developing this faculty of making things look shipshape; features that are commendable are being generally adopted and those that are the reverse are being eliminated.

Among the articles that are indispensable are inner tubes, and when it is considered that these are so delicate that they should be protected from contact with most other articles carried, and that they may be needed at any moment, does it not seem reasonable that a safe, dry and separate pocket should be provided, one that will be easily accessible without disturbing the occupants

Flaws in Motor Castings

FLAWS in castings are common, and very often impossible to detect. The metal near the top of the mould when making a casting will often be of a quality which is not nearly so desirable as that at the lower part. For this reason cylinders are cast upside down so that the better material will be found in the combustion chamber and heads. In best practice cylinders are cast in moulds which are too long for the particular piece of work in hand; the upper metal is then removed so that the entire cylinder is composed of the best material possible. This practice is common in the manufacture of all automobile engine cylinders where high-grade workmanship is made an objective point. Drop forgings are as a rule more reliable than castings, not being so subject to flaws and blow-holes, and in smaller parts they are used to a large degree. Defects in machined or cast parts cannot be charged to a lack of vigilance on the part of the proprietor of the car, and are mentioned merely to show in what manner breakages may occur which will fall outside of the home care of the car and inside the realm of the maker's guarantee.

CRYSTALLIZED alumina in aluminum bronzes is not only weakening but, being identical with emery, if it is found in a bearing it is as fatal as emery ingrained in the bronze would be. The presence of alumina is easily told, however. It is only necessary to polish a piece of the bronze. If the polished surface is entirely unbroken and smooth, alumina is not present. Should it be there, the buffer wheel produces characteristic streaks and lines.—Durville in *La Technique Moderne* on High Resistance Bronzes.

Utilizing the Space

of the tonneau? Figs. 1 and 2 illustrate two views of the front seat that show in section on the side elevation such a pocket as described above. The plan view shows the two seatings; it is practically an offset seat, the occupant beside the driver being provided with a very deep seat cushion that allows him to sit well back in a comfortable position. Whereas the cushion on the driving side is less in depth, and the back of the seat is apparently provided with thicker upholstery, in reality it covers a pocket, as illustrated on Fig. 1, that provides room for two inner tubes suspended from a wood bar. This bar is removable and is passed through the inner fold of the tube, to remove which it is only necessary to take out the driving cushion and raise the door as illustrated by the dotted line indicating the door when raised. This door, as indicated on Fig. 2, is made the width of the folds in the trimming, and the hinge in the trimming at the top is naturally provided at the place where the points meet and the buttons are placed. The wood door at the

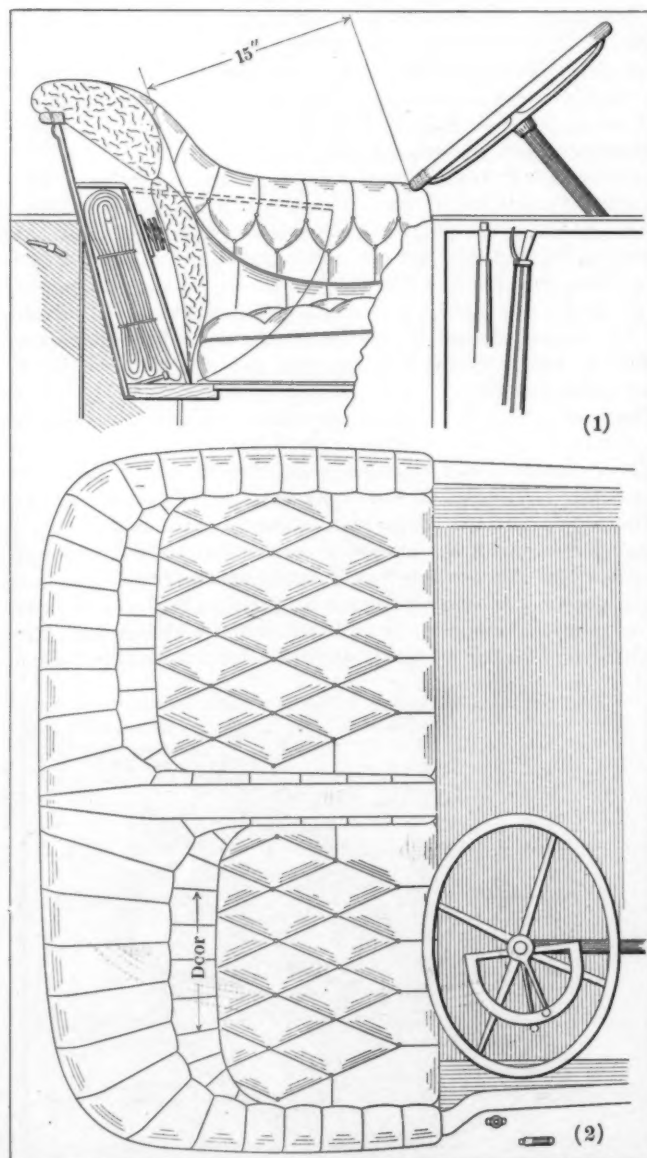


Fig. 1—Vertical section through front seat showing tire space
Fig. 2—Plan of front seats indicating utilization of space

e in Car Body Design

back of the trimming is provided with a hinge at the top, and when down its weight and the cushion pressed against it, keep it in its position. As shown, the tubes are in a box formed by the back of the seat, the bottom of the seat frame, the sides that form a rest for the door, and the top piece to which the door is hinged.

Fig. 3 is an improvement that is finding much favor among the users of cars in England; it is simply a leather cushion or pillow, made without springs and very flexible. It is kept in position on the rear seat by means of a strap as shown, and can be removed and placed at the rear of the front seat or it can be used for a foot cushion if desired. If the seat is too narrow for three persons—and most cars are—the third occupant will sit forward and by leaning back on the pillow will have a comfortable seat. The maximum seating capacity will thus have been obtained without crowding. If the occupants of the seat are strangers, the unpleasantness of wedging in shoulder to shoulder

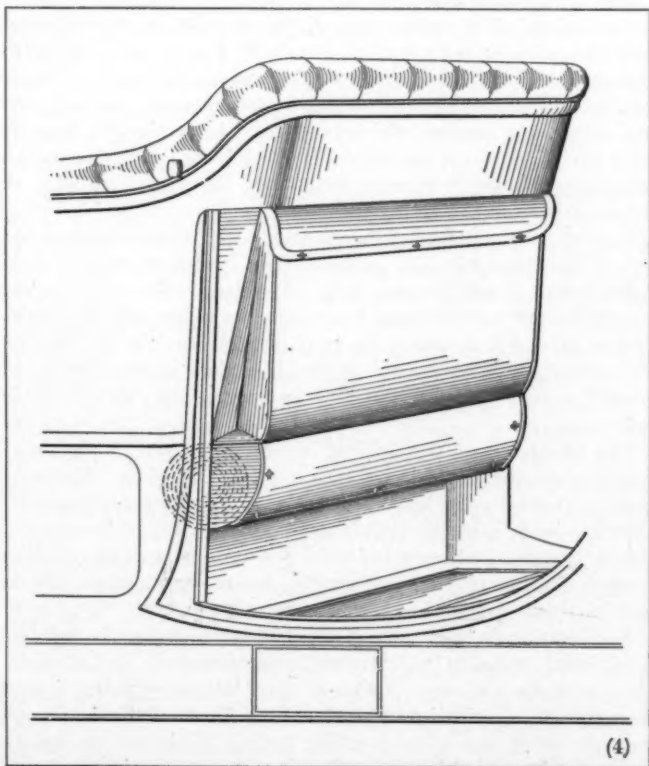
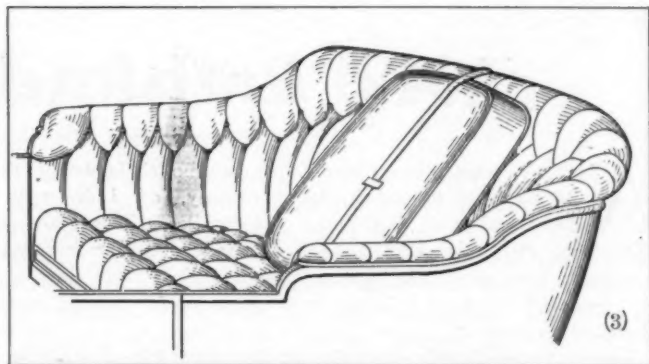


Fig. 3—Transportable leather cushion strapped to body of car
Fig. 4—How tools can be stored under floor to advantage

is avoided. If the seat is occupied by two persons only, the pillow serves as an arm rest and helps each occupant to retain his position, giving a pleasing individual effect to the widest seat in the car.

Fig. 4 is an illustration showing the storm curtains stowed away in a pocket underneath the front seat at the rear. This receptacle is cylindrical-shaped and is formed of metal. The side toward the rear of the body is open to allow of removing and putting away the curtains, and this opening is covered with a leather flap that is buttoned along the bottom edge and on the sides. This idea of providing a place for the curtains is already incorporated in the new Thomas model, and Fig. 4 shows an adaptation of it, but made to suit the average car with the gasoline tank under the seat. The space from the back of the gasoline tank to the back panel of the seat is usually too small to allow of placing a cylindrical roll large enough to hold the curtains of the average top without showing conspicuously in the tonneau, and to overcome this a leather pocket of generous proportions is provided that will naturally project out from the seat back not less than 5 inches. The cylindrical metal box is fastened to the under side of the seat frame and the flap that covers the opening is made a continuation of the leather pocket, thus balancing up the interior finish of the tonneau and providing room for a receptacle that will contain all the top curtains. These will be carried rolled up loosely and in addition will always be accessible when needed, without disturbing any of the passengers. The roll of curtains is shown in the illustration in dotted lines and the flap is buttoned fast. The pocket shown need not interfere with a robe rail; that can be fastened above it.

At the bottom of Fig. 4 is shown a door in the floor that covers a box the depth of the frame as indicated by lines on the side. This box is intended to be used to carry the pump, the jack and the heavier articles that are frequently needed, and it suggests the great number of carrying spaces around the car that are not utilized—places that are easily accessible and that can be made to do service in storing away tools and articles needed for touring, and which could be made to supersede the boxes that are carried so conspicuously on the running-board.

Oil-Burning Motor

DIESEL motors, while in principle too heavy for portable or automobile uses, are gaining new markets as power sources for factories and ships. They are now made not only in the four-cycle but also in the two-cycle type, and their economy no longer depends upon the price of crude oil in the locality where they are set up, as an improvement of the fuel mixer has adapted them to operate with oil of coal tar.

The gas and electric light company of Calais, France, which normally operates with the exhaust waste gases from a steel plant, has installed a four-cycle Diesel motor of 540 horsepower for reserve and emergency purposes, and this operates with oil of coal tar, making the cost per horsepower-hour 1.8 centimes at full power and 2.12 centimes at half power, as the oil costs only 8 francs per 100 kilograms and the average fuel consumption is about 225 grammes per horsepower-hour.

WHAT IS A HOLE IN THE AIR?—"Holes in the air," of which aviators complain, have been rationally explained. If an aeroplane is going against the wind with small speed, relatively to the earth, and then suddenly runs into a current which crosses its path or into a quiet section of the atmosphere, its speed is insufficient to uphold it and it drops and, if the motor power and propulsion are not strong enough to produce a rapid increase of momentum or if the aeroplane is too near the earth, the drop is likely to prove fatal. The explanation accounts for the accidents occurring when the aviator volplanes to earth with the motor power shut off and dives into unexpected currents near the earth's surface caused by hills, trees or buildings.—*Der Motorwagen.*

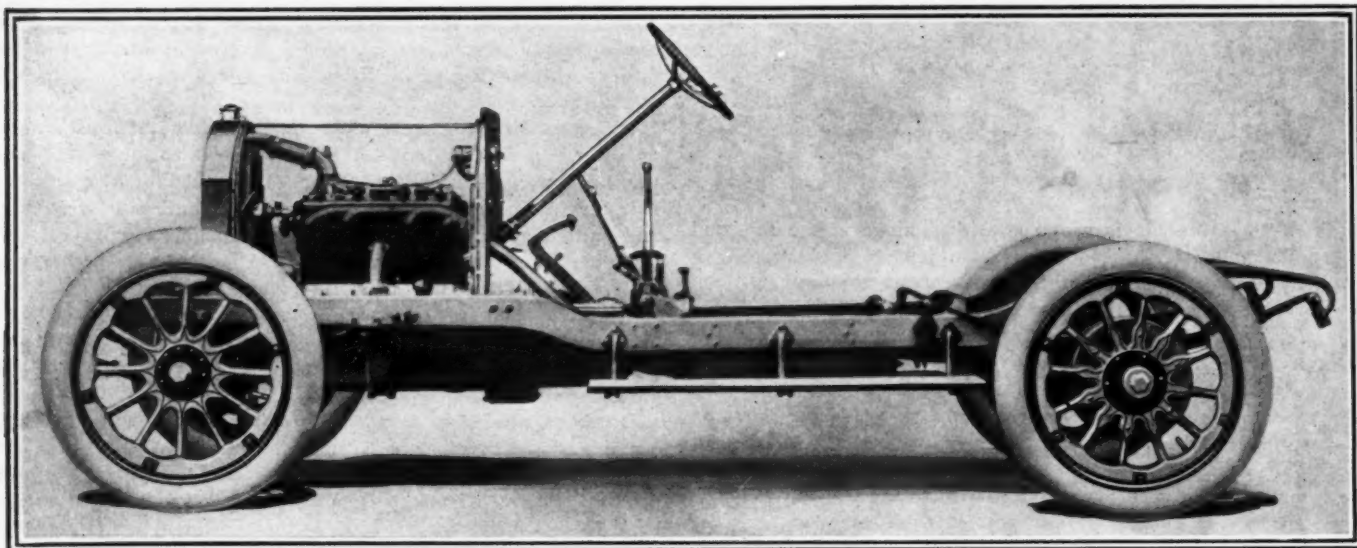
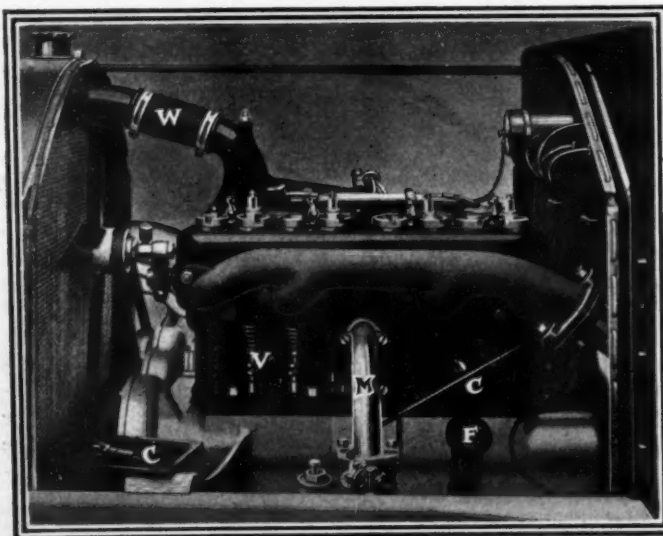
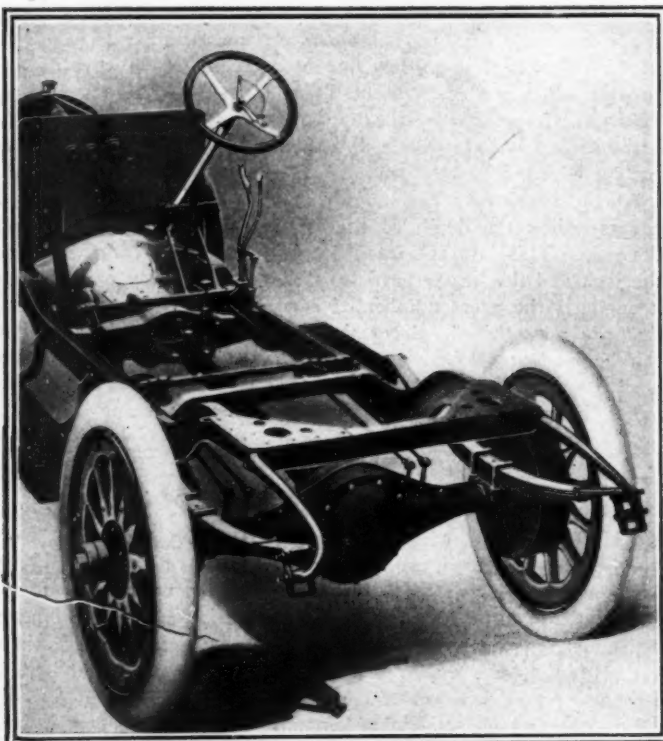


Fig. 1—View of new Pathfinder chassis

Fig. 2—Showing rear axle and suspension

Fig. 3—Illustrating left hand side of motor



1912 Pathfinder

AMONG recent announcements of 1912 models is that of the Motor Car Manufacturing Company, of Indianapolis, Ind., maker of Pathfinder automobiles. This company has placed on the market three body models—a five-passenger touring, a four-passenger phaeton built on toy-tonneau lines and the armored roadster. These are all mounted on the same standard chassis.

The motor with which this chassis is equipped is of the "bloc" type, having four cylinders with a bore of 4 1-8 and stroke of 5 1-4 inches. The valves are all on one side of the cylinders, with the valve springs and push rods V, Fig. 3, enclosed by the covers C to facilitate inspection and removal of parts. The intake and water outlet manifolds are cast integrally with the cylinders, and the opening which permits of inspection of these has been placed between the cover plates to insure easy access. The push rods are supplied with roller cam followers and give the valves a lift of 5-16 of an inch.

Cooling is accomplished by means of the thermo-syphon system. Two large pipes W; a fan F, Fig. 5, driven by the belt B, and a cellular radiator constitute the system. The motor is supported directly by the main frame at four points and the crankcase is extended rearward so as to entirely enclose the flywheel and act as a support for the gearset. A plate is provided in this housing so that the flywheel may be very easily reached for inspection.

The clutch is of the leather-faced cone type. It is 14 1-2 inches in diameter and has a face 2 5-8 inches wide. Six spring plungers beneath the leather provide an easy engagement. The clutch is held to its work by a 250-pound spring. The power is transmitted by a three-speed selective type of gearset of heat-treated chrome nickel. All shafts are mounted upon annular ball bearings.

The ignition is by means of the Eisemann or Bosch dual systems. For magneto adjustment an arrangement has been devised whereby the rear member of the Oldham coupling, joining the magneto M with its drive shaft, has been enlarged and contains 17 holes, the other member having 16, hence the adjustment may be varied by steps of 1 degree and 18 minutes.

There are two independent systems of oil circulation, each system having its own circulating pump, of the plunger type.

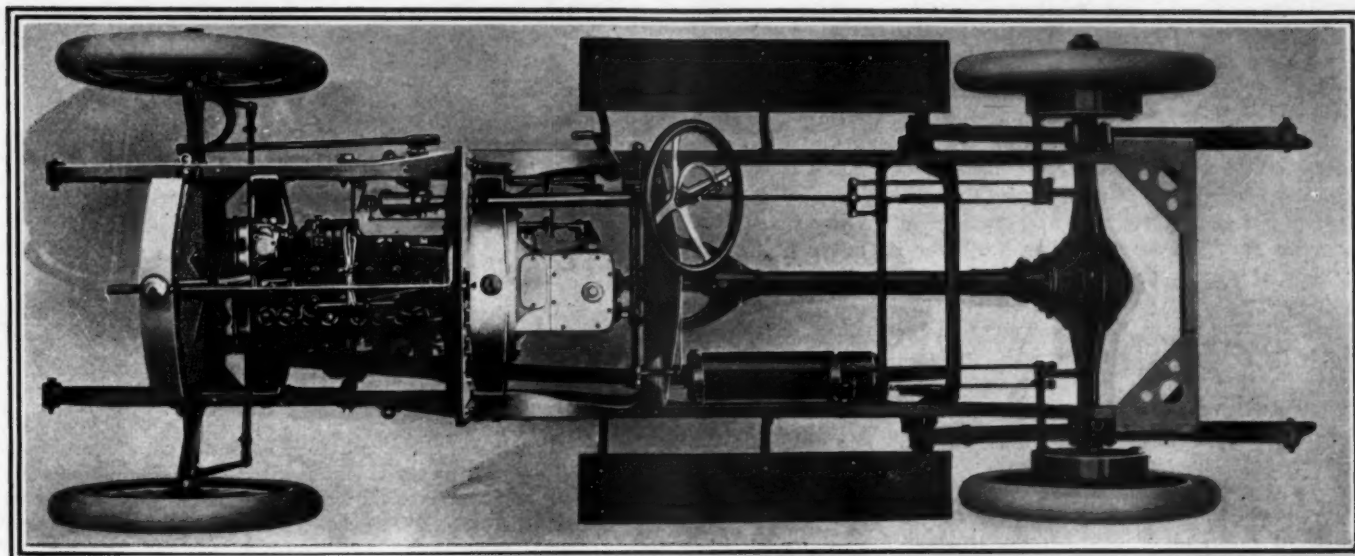


Fig. 4—Plan view of Pathfinder chassis

Fig. 5—Control mechanism of the new car

Fig. 6—Right-hand side of motor, showing magneto

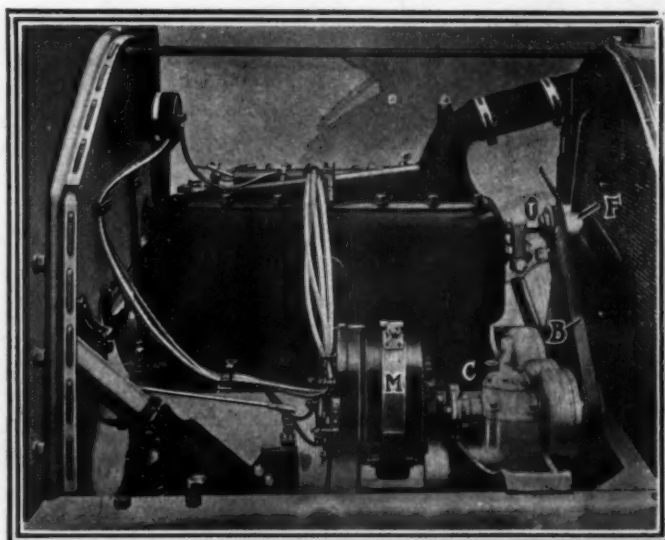
Makes Its Bow

These pumps are located on the valve side of the motor and are driven by the camshaft. Both pumps and their check valves are removable by withdrawing the plugs which are fitted beneath them. The oil is forced from the pumps to the sight feeds on the dash, all the piping except the leads to the sight feeds being incased in the crankcase casting to afford protection and insure a neat appearance. The oil reservoir is in the base and is filled by means of the filler tube F. There are two separate sight feeds located on the dash, one for each system. Both are of the bull's-eye type and are flush with the face of the dash. The oil flows from one sight feed to the rear main bearing and overflows into the rear splash trough and from the other sight feed to the timing gear case, overflowing into the foremost splash trough. In this way the oil supply will be uniform whether the car be ascending or descending a hill.

One universal joint, of the Spicer type, connects the gearset and propeller shaft. The drive shaft is covered by the torque tube. Under full passenger load a straight line drive is obtained, while with an empty car there is a three-degree angle between the shafts. The rear axle is of pressed steel with a vertical weld, its thickness being 3-16 of an inch.

The rear wheels are mounted upon two rows of ball bearings and are driven with six-jawed clutches. Brake drums are mounted on the rear wheels and are bolted to alternate spokes. Inside these drums are a pair of internal expanding brakes mounted side by side. They are 16 inches in diameter by 1 3-4 inches in width and are operated by means of whiffletree equalizers mounted on one of the frame cross members. Each brake can be adjusted from a point conveniently located under the floor boards at A, Fig. 5.

Both front and rear wheels have 1 5-8-inch spokes and carry Universal demountable rims, of which the equipment specifies one extra. The tire equipment is 34 x 4 inches all around, the tread being 56 inches, although a 60-inch tread will be supplied to Southern customers if so desired. The suspension both front and rear is by means of semi-elliptic springs. In front the length is 38 inches and in the rear 50 inches. The center of gravity of the car is kept low by means of the flat springs and a dropped frame. The shackle pins are hardened and lubricated by grease cups.



The change speed and emergency brakes are at the side and within both the body and the frame. Spark and throttle levers are placed as usual upon the 18-inch corrugated mahogany hand wheel. Clutch and brake pedals, C and B, are placed on the foot-board, with the accelerator between the two. The clutch and brake pedals have separate fulcrums. The centers are so arranged that the difference in arcs through which each pedal will travel is very slight. The object of this construction is to give straight-line pull upon the brake linkages and at the same time to obtain the proper reduction at the brake rocker arm.

In the steering gear a full worm wheel is used so that should there be wear the wheel may be rotated and a fresh surface engaged with the worm. As the worm is set upon a square shaft it can be so turned as to present four new wearing surfaces. The steering gear may be set at any angle without interfering with the adjustment.

The armored roadster body is of distinctive design. On this car the tank is carried in a portion of the body back of the seats. The rear is bevelled off in order to accommodate spare tires. Fore-doors, steering wheel and control levers on the right side and ventilated dash are features of the design. On the runabout access may be had to the seats from either side.

The frame is of channel section, being 4 1-2 inches in height throughout the major part of the side members. The thickness of the metal is 3-16 of an inch and the flanges vary from 2 to 5 inches in width, depending upon their location. At the front the frame is 30 inches wide, while at the dash it widens out until it is 34 inches. The frame is dropped 3 inches just back of the dash and 6 1-2 inches at the rear. There are four transverse members to the frame, one being just back of the gearset. This is a malleable iron casting and serves to stiffen the frame and help support the gearset, the torque rod support, the muffler cut-out and the emergency brake rod.

New Electric Limousine

A FIVE-PASSENGER limousine driven by electricity is now offered for sale by the Waverley Company, of Indianapolis. The most modern of electric equipment was necessary to operate a body of these dimensions and yet maintain the requisite speed and mileage capacity. The wheelbase is 104 inches, body sill 129 inches and length over all 144 inches. The wheels are larger than the former electrics produced by this company, the tires being 34 x 4-inch rear and 34 x 3 1/2-inch front.

The motor is of the Waverley multi-polar type with an overload capacity of 360 per cent., which transmits its power to the transverse shaft by means of a silent flexible gear. From the transverse shaft the power is transmitted to the floating rear axle by a shaft drive and herringbone gears. All running parts work in a constant oil bath. Battery and arc are completely

controlled by the Waverley No-Arc controller, which provides four speeds either in a forward or reverse direction. The motor cannot be started, however, on any other than the low speed, thus making for the safety and comfort of the driver and passengers.

Pains have been taken by the makers to have the upholstery as luxurious as possible and to give the car a tasteful design. The general effect is that of the French town chariot.

What Causes Sweating?

SWEATING is caused when the gasoline is vaporized, due to its refrigerating effect. Every liquid, when it is changed from its liquid state to a gas form, absorbs heat from its surroundings and the temperature of the surroundings is lowered. The amount of this refrigerating effect depends upon the characteristics of the liquid employed. Gasoline, for illustration, does not refrigerate nearly as much as anhydrous ammonia. The mere fact that the carburetor exterior and perhaps the intake manifold frosts up is a sign that a considerable amount of gasoline is being vaporized, perhaps too much. It might be well to readjust the carburetor with a view to starving the mixture with the hope perhaps that there will be less frosting and that the mixture will prove to be more efficacious for its purpose. The fact that there is no frosting must not be taken as an absolute sign of good working conditions, because if the liquid goes into the combustion chamber before it vaporizes it will then "crack," forming a carbon deposit over the internal surfaces.

Loss of power is due to so many things that it will be impossible to put your finger upon the precise trouble without going to some pains, more or less systematically. It is to be hoped that the compression in your cylinders is good, that the carburetion is satisfactory, and that the ignition system is capable and well timed. With all these matters properly attended to, it remains for your air-cooled motor to work at a sufficiently low temperature to permit of a sufficient weight of mixture to enter the cylinders and perform useful work. If your trouble is due to overheating, loss of power may then be charged to one or more wrong conditions, as pistons that stick when they are heated, due to expansion, poor lubrication, due to the burning up of the lubricating oil, and insufficient mixture, due to the fact that the incoming mixture is rarefied by heat, and this condition may be accentuated sufficiently to result in a noticeable loss of power.

THREE YEARS AHEAD OF US.—"Of course," says *The Automobile Engineer* for September, speaking of American manufacture, "the adoption of the long strokes will act just as it has here (in Great Britain), by producing lubrication, vibration and noise troubles; so it is likely to be three years before the average American engine is as good as is the average European engine now."

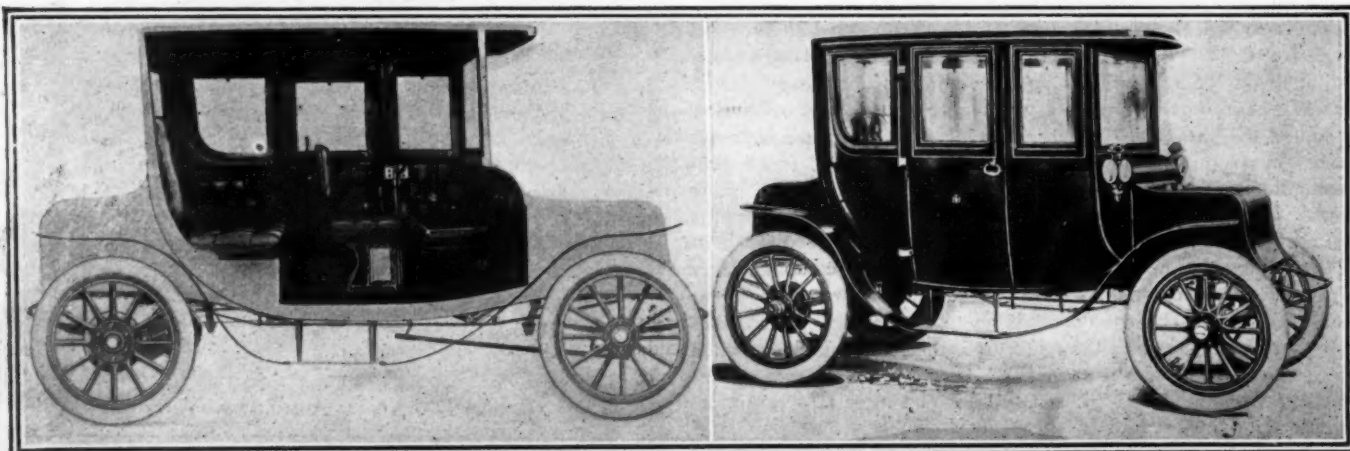


Fig. 1—Interior view of the new Waverley electric town car

Fig. 2—Illustrating the electric limousine produced by the Waverley Co.

My 1912 Automobile

Some Conceptions of What the Ideal Car Should Be

Wants Multiple Disk Clutch

Editor THE AUTOMOBILE:

Permit me to add my idea to the many for an ideal 1912 motor car: The power plant of the car should be composed of a four-cylinder, four-cycle engine of 4 1-2-inch bore and 5 1-2-inch stroke, which would give the car about 32.4 horsepower, which is sufficient for touring purposes. The four-cylinder car is, I grant, inferior to the six-cylinder motor, but for horsepowers under forty I cannot find enough advantage in the six to warrant the extra cost. The engine should be of the L-head type, which will hold down the cost of construction, and the cylinders cast in pairs. The motor should be equipped with a Schebler or Stromberg carbureter and a four-cylinder tire pump fitted with clutch for engagement for pumping up tires.

Ignition should be from a Remy magneto light, which will furnish a complete electric lighting outfit for all lights on the car and also a dual ignition system.

A multiple-disk clutch of ample size and strength equipped with a ball bearing to act as a thrust bearing for same. Drive should be by shaft, enclosed and running on roller bearings with one universal joint, three-speed and reverse selective transmission running on roller bearings should be incorporated in rear-axle assembly. Rear axle should be of full floating type.

All wheels should be on roller bearings and the springs suspension should be of the best trade, being half elliptic in front and platform in rear; 36-inch x 4 1-2-inch tires all around, and standard quick-detachable rims used, not demountable. The wheelbase should be 120 inches. The front axle should be of vanadium steel in I beam.

A 25-gallon gasoline tank should occupy the rear of the chassis. The gasoline from this tank should be forced by automatic pressure to a small tank on the dash, and from thence flow by gravity to the carbureter.

The bearings in the motor should be of best babbitt and of large size the crankshaft main bearings not being less than 3 inches in length.

Lubrication should be from a self-contained splash in the crank case. Oil circulated by a gear pump with a glass sight feed showing amount of oil.

Frame should be best pressed steel, narrowed in front to permit short turns.

The brakes should consist of a service brake by pedal, operating two external contracting bands on drums on rear wheels,

and the emergency brake operated by lever should operate two internal expanding bands on the same drums. All brakes should have easy adjustments and equalizers. The control of the car should be from the right side in every sense of the word; no control levers in the center of the car.

This car should be equipped with a five-passenger touring car body with detachable foredoors, and ventilators in dash of a serviceable size. The equipment should consist of a good speedometer and clock, foot rest in tonneau and robe rail, good top and side curtains, a glass windshield, electric lights all around, tire carrying-irons at rear of car, a good bulb horn, and full set of tools, etc.

The above car should weigh 3,000 pounds and cost \$2,000, and should be put on the market by some old-established and reliable concern who have done business in building motor cars for years past. The parts for this car should be sold at a fair price direct from the factory to the user.

Lebanon, Pa.

C. L. W.

Specifies Five-Inch Tires

Editor THE AUTOMOBILE:

The following are the specifications of my ideal car:

The engine should have six cylinders of the L type, cast in pairs, with removable plates over water jackets to allow cleaning, having a bore of 5 inches and stroke of 6 inches, with 2 3-4-inch valves with adjustable lifts, valves enclosed to exclude grit, giving it a full 60 horsepower.

Offset crankcase split in half with side opposite camshaft removable to allow access to and the removal of the crankshaft, connecting rods or pistons whenever necessary without having to take down engine.

The lubrication should be by positive force feed by gear-driven pump to all bearings and splash to connecting rods and pistons, oil contained in tank at side of engine with sight feed on dash.

Ignition should be by either Bosch or Eiseman magneto and storage battery, with two sets of spark plugs over valves.

The cooling system should consist of honeycomb radiator with gear-driven fan and water pump.

Selective type of transmission is my choice, with four speeds forward and reverse running on ball bearings with direct drive on third speed and geared 3 1-2 to 1 on direct drive.

The large diameter multiple-disk clutch should be mounted on ball bearings, run-

ning in oil, with six tension springs equidistance apart, to allow taking up of wear.

A through shaft fitted with two universal joints should be packed in grease to differential with a torsion rod alongside, and from differential to rear wheels through live axle. Both differential and live axle running on Timken roller bearings.

The front axle should be of I-beam pressed steel, and a full floating type rear axle ought to be installed.

Twelve-spoke, 38-inch wheels of wood, mounted on Timken roller bearings should be fitted, these to be shod with 5-inch tires; all wheels with quick detachable demountable rims.

There should be four large brakes on two rear wheels, two internal for emergency, and two external for service.

The wheelbase should be 130 inches.

Semi-elliptical springs should be in front and three-quarter elliptical in rear, with Truffault-Hartford shock absorbers on each spring.

Steering should be by worm and sector gear, irreversible type, with 18-inch wheel.

The equipment should consist of fore-door torpedo type body seating five persons with comfort, with space enough in tonneau to accommodate two auxiliary seats whenever desired, top, windshield, speedometer with clock, two extra rims with tires, covers and tire irons, tire trunk, trunk rack and trunk, foot and robe rails, two headlights, two side lights and one tail lamp, all electric, getting current from storage battery charged by generator driven by engine, electric horn, engine-driven tire pump, jack, complete set of tools, and a positive self-starting outfit. A car such as this should cost \$4,000 or thereabouts.

HAZLEHURST.

Hazlehurst, Miss.

Cheapness a Factor

Editor THE AUTOMOBILE:

I have followed with great interest the opinions of the various readers of THE AUTOMOBILE as to what the ideal 1912 car should be. I notice that in nearly all cases a high-priced car is specified, as is perhaps perfectly natural when it is considered that the very best materials and construction will enter into a car classed as ideal. It would seem to me, however, that a somewhat cheaper car should be described as the quality of cheapness is a very important factor to the average buyer of an automobile.

INTERESTED.

Readville, Mass.

Letters Answered and Discussed

Pipe Joint

EDITOR THE AUTOMOBILE:

[2,851]—Would you kindly tell me of a method of joining together two pipes of different sizes? I wish to make a solid joint that will not be apt to bend at the point of juncture and will hold its shape against considerable strain.

AMATEUR.

Fargo, N. D.

The best method of joining the pipes is by means of a brazed flange, as shown in Figs. 1 and 2. In the sectional view an idea of the way in which the flange is fitted is given. And if the fitting is made in this manner there will be no constriction of the free area. The distance C in the plan view should be equal to the diameter of the pipe plus twice its width in order to give a reliable fitting. The two inner circles in this drawing represent the thickness of the pipe and the outside circle shows the outside of the pipe flange.

Pounds in Neutral

EDITOR THE AUTOMOBILE:

[2,852]—Kindly let me know through the columns of THE AUTOMOBILE the following: I have a 26-horsepower, four-cylinder, four-cycle motor, which, when in neutral, develops a distinct pound. However, when traveling at speed this noise disappears entirely. I have thoroughly cleaned the cylinders, and the carburetor is positively correct. What is the matter?

A SUBSCRIBER.

New York City.

You probably advance the spark too far when the engine is running free. This will produce a distinct pound. Loose parts would knock while running in gear.

Cylinder Leaks

EDITOR THE AUTOMOBILE:

[2,853]—I am inclined to believe that there is a leak at some point in one of the cylinders of my four-cylinder 30-horsepower motor. Would you kindly tell me where the usual sources of leaks are found, and if there is a leak how it is detected? I would be greatly obliged for

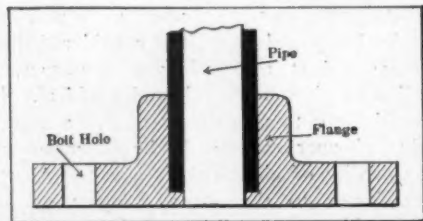


Fig. 1—Section through a pipe to which a brazed flange is fitted

The Editor invites subscribers to communicate their automobile troubles and personal experiences, stating them clearly on one side of the paper. If the nature of the case permits, send a sketch, even if it be rough, in order to assist to a clearer understanding. Each communication will receive attention in the order of its receipt, if the writer's signature and address accompany it as an evidence of good faith. If the writer objects to the publication of his name, he may add a nom de plume.



My Best Repair

Temporary automobile repairs made by the driver or owner while on the road and permanent repairs made in the garage after the run is over, are interesting to all automobile owners.

Every driver at one time or another gets up against it. Something breaks or gets out of order on the road—a stop has to be made and some repair effected.

It may be a spring leaf has broken; a shackle bolt or strap may break; a steering tie rod is bent; the car skids into a curb and bends a steering arm or the starting crank; a throttle or magneto connection breaks owing to vibration; a radiator leak is started by a stone or some other means; a leak in the gasoline tank is discovered; there is a small hole in the gasoline feed line; a brake facing may burn out; a brake connection breaks; a front axle gets slightly sprung; a clutch starts slipping, or any one of a thousand things may happen.

Every automobile owner is interested in knowing how repairs have been made, how long it took to make them, how much they cost, and by whom they were made. All this information broadens the knowledge of the automobile owner and so helps the industry.

Thousands of car owners who are readers of THE AUTOMOBILE, have had experiences of this nature and have made a temporary roadside repair—a permanent cure at the garage. We want you to write in simple language in a letter what repair of this nature you have had to make, how you made it, how long it took you and how much it cost.

You can make with your lead pencil one or two rough sketches indicating the broken or damaged part and showing how the repair was made.

We are going to publish these repair letters from week to week in these columns. Every reader should send in one experience or repair and how accomplished.

Some have experiences with short circuits, adjusting carburetors, motor knocks, hard starting, noisy timing gears, etc. Information on how these were discovered or rectified are equally interesting.

The experience of each reader is interesting to every other reader. To you, some of your repairs or experiences may be commonplace, but to owners of automobiles with less experience they are most interesting.

Analyze your past experiences and send in one or two of them.

Give your name and address, legibly written. If you do not want your name to appear, make use of a nom de plume.

EDITOR THE AUTOMOBILE.

any information that you would give me regarding this trouble.

R. C. HOYT.

Camden, N. J.

First test for leaks about the spark plug or at any other points at which there is an opening into the cylinder. The test is made by putting light grease or heavy lubricating oil about the suspected points and watching for bubbles.

If the leak is in the piston it may be detected by allowing the motor to have a rich mixture and then opening the crankcase to see if there is any smoke within the confines of the casting. If there is smoke it may be taken as a sign that there is such a leak. The piston rings should be examined in a case of this nature.

Should the cylinder be cracked between the combustion chamber and the water

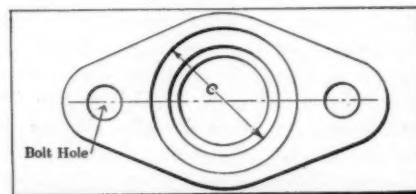


Fig. 2—Plan view of a brazed pipe flange showing the bolt holes

jacket the damage may often be very hard to detect owing to the fact that the crack will remain closed while the motor is cool, but as it heats up the crack will open. A cracked cylinder, though, will make itself apparent by the boiling cooling water.

Outside of the cylinders the valves should be noted to see if they are perfectly clean, as a leak will occur in the compression if there is a flake of carbon between the valve and its seat. Leaky exhaust manifolds are detected by a wheezing sound and leaky intake manifolds by a weak mixture which will cause popping back into the carburetor.

Regarding Carbureters

EDITOR THE AUTOMOBILE:

[2,854]—Being a subscriber of THE AUTOMOBILE I would like to ask the following questions:

(1) When setting the adjustments on a carburetor, how many parts of air and how many parts of gas should be given?

(2) When setting the float level of a carburetor, when all the gasoline is out, how is it possible to tell when it is at the correct level?

A. J. K.

College Point, N. Y.

(1) In adjusting the carbureter the parts of air to gasoline are not determined, as they are allowed to vary at different speeds of the motor. The maximum explosive effect of gasoline is obtained when there are about eight parts of air to one of gasoline vapor. The carburetion will vary at different motor speeds on account of the greater amount of suction produced by the piston when traveling at the higher speeds and for this reason it is much easier to secure good carburetion at higher piston velocities.

When it is necessary to adjust the carbureter the matter should be gone about systematically and the steps taken well defined or else it will be an impossibility to secure the best results except by accident. The first step is to set the air valve in the mid-position, open the throttle about half-way, retard the timer and start the motor with the gears in neutral or the clutch disengaged. The throttle valve is then opened and closed quickly, with the timer set in different positions and the results noted. If there are back-fires, either open the fuel valve or close the air valve, according to judgment; if in doubt, try both and note

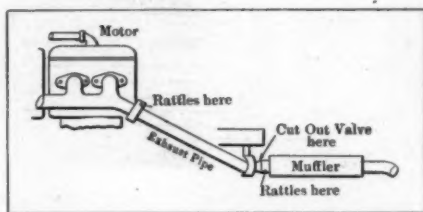


Fig. 3—Illustrating points of leakage in loose exhaust pipe

which gives the better results. If instead of back-fires the motor smokes, close the fuel valve slightly or open the air valve. When the motor works satisfactorily on different positions of the timer the car should be taken out on the road and put into high speed and the speed acceleration noted with the carbureter setting in the position which seemed best in the above-mentioned adjustments. Change the fuel valve setting without touching the air regulation until the motor picks up best along the road or up a hill, then note the effect of a slight change in the air valve in either direction. Vary these two (fuel and air valves) alternately until the most satisfactory results are obtained.

(2) The different makes of carbureters vary to a great extent in the manner of making the float adjustments. The height at which the float will be carried will vary with the density of the gasoline so that without the fluid in the chamber it would not be very well possible to ascertain the correct height with any degree of accuracy. The gasoline level should be about 3-32 inch below the level of the nozzle. It would be advisable in making the adjustment to obtain directions from the maker regarding the type you employ.

Exhaust Pipe Rattles

Editor THE AUTOMOBILE:

[2,855]—The exhaust pipe on my car has become loose so that it rattles. I think it is probably due to having attached a cut-out valve in the position shown in the accompanying sketch (Fig. 3). It is loose both at the entrance to the exhaust manifold and at the muffler. Is there any way in which it may be tightened?

Ellenville, N. Y.

A. D. P.

This is a job which should be turned over to a pipe fitter if satisfactory results are to be obtained. It might be possible to remedy the rattle temporarily by lagging the connections, with asbestos wrapped firmly about the points indicated, fastening this by means of metal strips which have been bent so that a small bolt can be passed through the ends and drawn tight. If necessary, the exhaust pipe should be rethreaded.

Needs More Air

Editor THE AUTOMOBILE:

[2,856]—My motor, which ran very well up to a short time ago, has acquired some faults. The trouble seems to be in the carbureter, as the motor will smoke at all speeds. I do not like to change any adjustments without knowing what I am about. I wish you would direct me.

CARBURETER.

Saginaw, Mich.

You will find elsewhere on this page complete directions for making the adjustments on the carbureter. Before starting to adjust, note if it is clogged in the air passage, as shown in Fig. 4.

Carbonic Gas in Tires

Editor THE AUTOMOBILE:

[2,857]—Some time ago there was an article in THE AUTOMOBILE relating to the effect of carbonic gas on the rubber in tires. My recollection is that it was stated that the gas had no deleterious effects, but that it leaked through the pores of the rubber much quicker than air will. I would thank you very much if you would tell me whether I am right or not concerning the properties of this gas.

J. S. A.

South Orange, N. J.

The properties of this gas in relation to rubber are as you state.

Loose Steering Wheel

Editor THE AUTOMOBILE:

[2,858]—I would like advice on how to tighten my steering wheel. As far as wear is concerned, everything seems to be all right, but as yet I have been unable to find the correct place to make the adjustment. My car has a worm and sector type of steering gear.

J. H. B.

Swedesboro, N. J.

Loosen the nut in the eccentric bushing at the sector. Turn the bushing and tighten the nut. If the play is in the ball thrust bearing, the adjustment is made by tightening the nut provided for the purpose. If the balls are worn they should be immediately replaced.

Washing Radiators

Editor THE AUTOMOBILE:

[2,859]—In your issue of Sept. 14, under the title of "The Upkeep of the Car" you advise washing the radiator of the car with a soda solution. Can you tell me what would be the correct solution to use?

G. F. W.

York, Pa.

The solution need not be carefully measured, a generous handful to a pail of boiling water being sufficient. Clean water should be run through the radiator after having washed it with the soda.

Don't Use It

Editor THE AUTOMOBILE:

[2,860]—Would you kindly tell me what they put into the gasoline to increase the power of a motor when in a hill climb or race?

(2) What is a live rear axle?

READER.

Pittston, Pa.

It is not a very advisable proceeding to put anything into the gasoline. Picric acid has been used to some extent.

(2) A live rear axle is one which turns with the wheels of the car, the power being delivered through them.

Oil in Gasoline

Editor THE AUTOMOBILE:

[2,861]—In regard to the practice of putting oil in the gasoline supply for the purpose of lubricating the cylinders, do you consider this advisable? If not, kindly inform me of the disadvantages incurred.

S. LINDON.

New York City.

This matter has been well threshed out in the columns of this paper in the issues of March 23, page 783; April 13, page 905; April 27, page 1014; May 11, page 1092; June 1, page 1223; June 22, page 1404, and July 20, page 108.

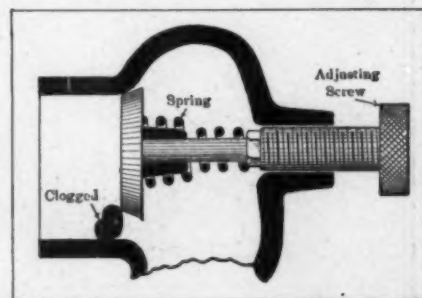


Fig. 4—Point at which the air valve of carbureter may be choked

Finding Weak Spots in the Car

THE weak spots of a car are not always parts that are directly connected to the driving mechanism, but are frequently the little adjuncts which may be considered luxuries, rather than necessities, so far as the actual capacity for travel of the vehicle is concerned. These auxiliary fittings are often of a nature that renders them necessities; but when the more vital parts of the machine are well cared for, it suggests a great lack of thoroughness on the part of the responsible parties if these parts are neglected to such an extent that they do not compare with the other parts of the car in appearance, material or adjustment.

A lack of cleanliness may go a great way toward destroying the efficiency of a given part. Take, for instance, the brakes. It very often happens that oil will leak into the brake bands of a car. This oil will flow from the differentials into the brake drums by means of the rear axle, and will collect there, forming eventually into a thick gum or paste, which gives the brakes a marked tendency to slip. A case where a grease-filled brake drum very curiously brought about its own destruction is illustrated in Fig. 2, where a drum is shown which was broken in a collision. The brakes were jammed on as the emergency of a rapidly approaching car on a narrow turn arose, and, on account of the thick coating of grease with which the brakes were covered, the car swerved and collided with the other vehicle, thus incurring the damage shown.

The mudpan has nothing to do with the running qualities of a car, but if swung too low it may have a very nasty tendency to drag and bump along the road, reducing itself in a very short space of time to a shapeless mass of metal, which will make the most handsome car appear a very slovenly outfit. In Fig. 1 a case is shown where the pan was submitted to the vagaries of a rather irregular highway, and as a result was soon reduced to



Fig. 1—Battered mudpan which was swung so low that it struck the road

the state depicted in the illustration. When the pan is fitted it is not with the desire of removing the high spots from a bad road, but as a matter of precaution in the desire to protect the motor from the dirt and dust of the highway. In fitting the pan a little perspicacity should be employed, and where very rough going is to be encountered it should be fitted with due regard for the necessary clearance. In foreign travel, especially in France, where the roads are as a rule very flat, the low clearance allowable very often deceives those who come from abroad to tour in this country, and in many instances the low suspensions of the foreign cars render them unsuitable for transcontinental touring in this country.

In the case of frame members and springs, which are classified

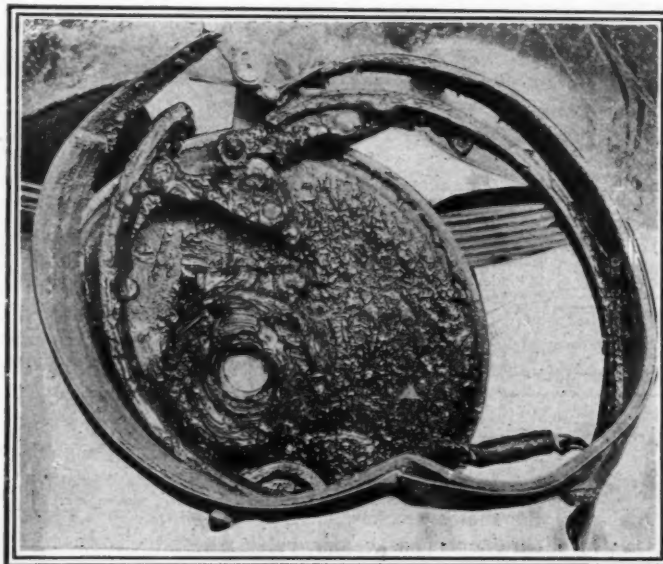


Fig. 2—Broken brake. Note the thick coating of accumulated grease

in the mechanics of materials as "simple beams," the greatest stress in the material is at the longitudinal center between supports, and therefore the metal which composes the various leaves of a spring is generally tapered so that it attains its maximum width at this point. In the case of frame members the same may be said to be true, though they are generally made of such sectional strength that a large factor of safety over their probable maximum load is given. It seems strange in the light of these facts that material should be cut away from the vital parts of a spring or other part of the mechanism without some compensating features in the way of added material or other strengthening device. When a spring fails it will be, as a rule, through the center of its length, and the failure will be caused by bending and tension, so that if a hole is drilled through a spring at this point it will be weakened in the very spot where the greatest strength is needed to resist failure. In Fig. 3 a spring is shown which was weakened by drilling a hole through the center. A bad spot in the road was encountered and the spring, as may well have been expected, failed at the point where the hole had been drilled.

In order that the best construction be maintained through any piece of mechanism an equality of strength should be maintained. That is, there should be no more weakness in the direction of compression than there is by tension or torsion. In designing the machine these strengths should be equated in order

to determine the correct thickness of the material; and in case any holes are to be bored for clips or holding-down bolts the weakening influence of the holes through the material should be included in the calculations. Each leaf of the spring is under both tension and compression when carrying a weight. This may be illustrated by taking for an example a plain plank resting upon two supports, one at either end. If a weight is placed upon the center of the plank it will sag and the upper surface of the plank will be compressed while the lower will be stretched or placed under tension. If this is not clear it may be easily demonstrated by coating the board with some non-elastic material and the effect of bending the plank noted upon the same. The tension and compression in the spring are both at a maximum at the center of the plank, as they would be in the spring, and it can readily be understood that accidents such as that shown in Fig. 3 may be expected where the hole is drilled and no compensating material added to this vital part.

The loose fan bracket is rarely the fault of the builder so much as that of the subsequent proprietor of the car. It will generally manifest itself by a sort of rattling sound which it gives forth as the car is proceeding on its way. If this noise is taken cognizance of at once, the fact that the fan hits the radi-

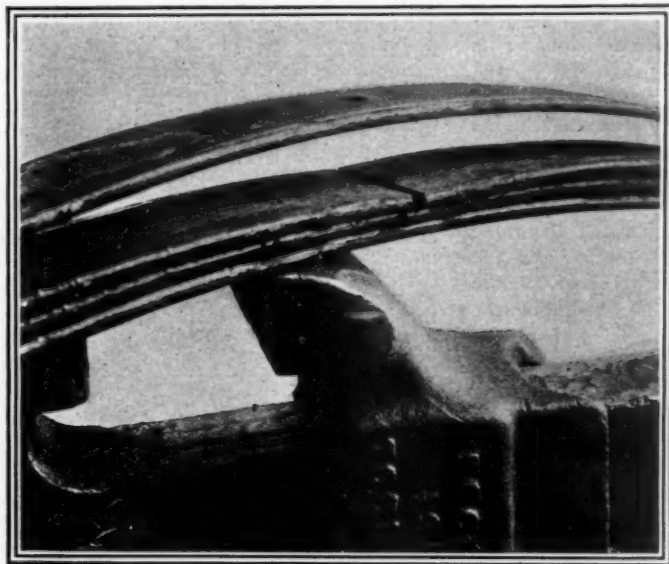


Fig. 3—Spring broken from excessive strain. Note position of bolt hole

ator as it revolves will be noticed in time to prevent the demolition of the fan. When the fan is driven by belt the bracket will often work loose after the car has been driven for some time. The result of a loose bracket is shown in Fig. 4, and, as may be seen, the fan is beyond repair.

Noise and its accompanying imperfections are rapidly being eliminated from the automobile, and smooth-running qualities are being substituted for the minor faults that cause the small annoyances which will occasionally be exposed. Progress in the lines of construction is still on the march, and in the elimination of noise and other sources of inconvenience the greatest steps in advance are being made. In the early days the fact that the motor would run for a large number of miles without a hitch was considered the greatest factor in the development of the car, and all other things were naturally secondary. Now that the number of roadside repairs has been reduced to the point that they consist almost entirely of tire changes, greater attention is being given to the little refinements which tend to the bettering of the running qualities and the silencing of the motor.

The matter of carrying tools has been given considerable attention in the later models of cars, and the ideas of the makers vary to a large extent on this detail. The placing of tool boxes on the running board has not met with the approval of a number of people who drive cars. It is also inconvenient to have the tools placed in such a position that the passengers in the car

will have to get out upon the road in case a stop is made to effect a minor repair.

The placing of the different appurtenances of the car has not so much to do with its well-being as the adjustment and fitting of these details when they are placed upon the machine. A squeaking body is just as annoying as a noisy motor even if it does not give the same indication of weakness and faulty design. The manner of supporting a weight should be sufficiently stiff to hold it against the vibrations of the car, and in the fitting of accessories of any description the method of fastening the same should be made a matter of great care on the part of the person who is doing the work. As mentioned above, the derangement of a minor part may often be of great influence in destroying the action of the entire machine, and the derangement is generally due to either inadequate fastenings or, as in the case of the fan bracket mentioned, the facilities for holding the part may be entirely adequate, but through neglect the holding-down bolts or other parts may become loose and the integrity of the part destroyed.

The greatest enemy to the best efficiency of a motor is inaccessibility, for it is in this that the reason lies that the adjustments are not made. Very often a slight knock, which would be adjusted immediately if it were easy to reach the affected part, is allowed to continue until a permanent weakness is developed in the motor and extensive repairs are necessary to restore the motor to its original condition. An inspection cover fastened over parts which are subject to wear or other damage will in many cases be the instrument of salvation to parts which would otherwise rarely if ever be examined.

There are some defects in a car which may gradually develop without the cognizance of even the most careful driver. These generally terminate in a breakdown upon the road and may have results which are very serious. A sudden swerve may put a strain upon the steering knuckle, for instance, which may tax it very nearly to the limit of its capacity. When this strain due to the swerve is supplemented by the shock caused by a rut a break would be very apt to ensue which might result seriously if the car were traveling at a rate which rendered it impossible to stop immediately, for a broken steering knuckle is distinctly beyond the scope of roadside repair.

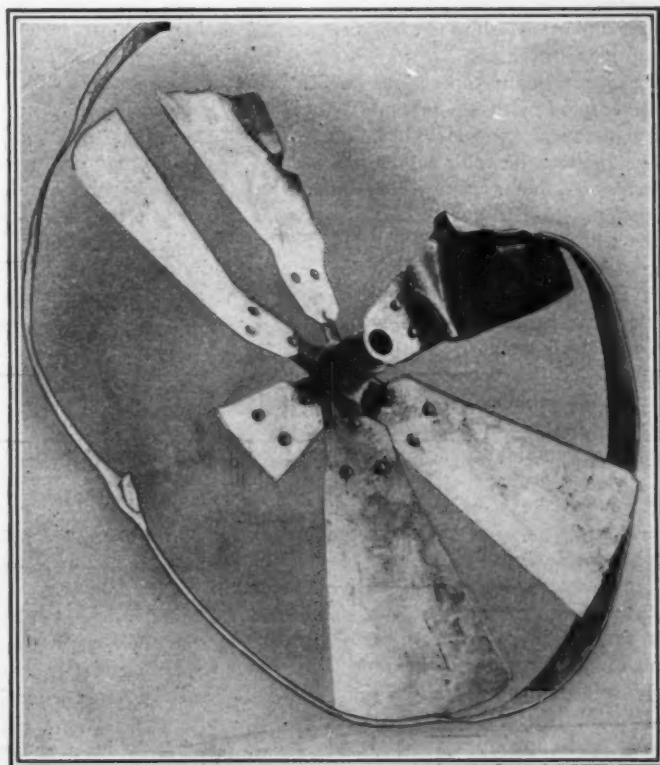


Fig. 4—Showing a demolished fan which resulted from a loose fan bracket

Little Bits of Motor Wisdom

Pertinent Pointers for Repairman and Driver

OUTFITTING THE HOME SHOP—One of the most fascinating pursuits to those who are in any way mechanically inclined is to spend a rainy day in the shop making the repairs that seem to be necessary and the little refinements which, although not a necessity, add greatly to the well-being of the car. The home shop may vary from a mere barn with a few commonplace tools to the elaborately fitted building with a

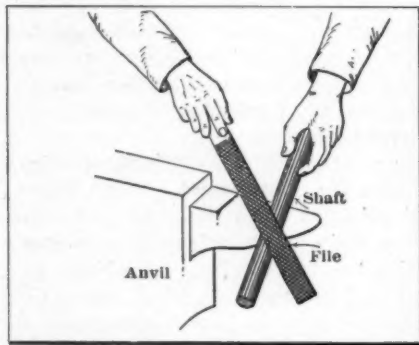


Fig. 1—Illustrating method of decreasing the diameter of a shaft by hand

forge and power machines. The latter will, of course be an extraordinary case, but between the two there is a range which will include any shop which the private owner may install.

There are many operations which can be performed with the ordinary tools of which the average owner will be possessed; that is to say, the tools which are not operated by machinery, but which depend entirely upon the handiwork of the operator. These will include the bench tools such as files, chisels, a vise, valve-grinding equipment and all the other appurtenances of the ordinary home shop. A few heavy tools may also be among the outfit if large repairs are to be occasionally undertaken. The most useful among these larger tools will be the forge and anvil, as many repairs which could be very easily made by the car owner or the private chauffeur, if the garage or shop were equipped with some apparatus for heating the metal, will otherwise have to be sent out. The garage is usually equipped with a gasoline torch, with which most of the small jobs such as soldering, etc., can easily be performed; but for other and larger work the torch is inadequate.

After the bench tools and the forge the next in order of importance is the lathe. The lathe may, in a great many ways, be more important than the forge, but since

the installation of a driving plant is necessary before the lathe may be properly operated it involves quite an expense and one which would not be justified unless the owner intended to do a large amount of work. There are so many duties to which a shop could be put, by the out-of-town proprietor, especially, that such an expenditure would no doubt be justified, inasmuch as the same machinery for driving the power plant could be used in pumping water, churning and all the various operations consequent upon the upkeep of the country house. Electric lighting is used in the modern suburban house, and when such is the case the same current which supplies the house could be carried to the garage and employed to drive the machinery installed.

A lathe, drill press and blower fan for the forge could all be operated from the same motor to good advantage, and the same belting could be used to operate the pump and the churn. When installing the belting and machinery, the work should be done by one who is an expert in the line, as the subsequent saving of time and space, not to mention the factor of safety, would well repay the extra expenditure involved in the employment of a capable man. The manner of arrangement of a shop and its lighting will determine to a large extent the time and cost of making the various repairs. This is just as much, proportionately, in the case of the home shop as it is when the larger calculations of the manufacturing plant are involved.

The bench should be as long as the confines of the shop will allow and should be well equipped with vises. It should be divided so that certain classes of work are carried on at fixed parts of the bench and the corresponding tools so arranged as to be handy for the class of work to which they are adapted. If vises are clamped to the bench at about three different places along its length they will go a long way toward saving the time and steps of the person who is making the repair.

THE GRINDSTONE—The dull-edged tool is the most unsatisfactory thing to be encountered in the shop. It is dangerous to handle owing to its marked tendency to slip and inflict a gash upon the user, and it is unsatisfactory in regard to the quality of work produced by its use. A dull tool, although not adapted to the cutting of material, is in every way fully qualified to inflict an ugly wound upon a human being and should hence be dispensed with.

The primary instrument in the grinding of tools is the grindstone. The grindstone is driven either by hand, pedal or power through a belt. When driven by hand it requires two to perform the tool-sharpening operation and is for this reason very unsatisfactory. The hand-grinding instrument can readily be changed to the pedal variety, which is a step in advance. The last and best, the power-driven stone, is generally found in shops which are equipped with other motor-driven tools. There is always a method of feeding water to the surface of the stone while it is performing its work. In the hand-driven variety the person turning the stone has the added duty, as a rule, of occasionally pouring water from a handy can upon the surface of the wheel. Or, as is generally done in the foot-propelled variety, a bracket is arranged and the can hung upon it; a hole is then punched in the bottom of the can, which allows the water to leak through fast enough to keep the stone thoroughly wet. In the power-driven wheels the water is generally led through a pipe with a valve by means of which the supply of water may be varied to any degree.

The stones in common use are composed of a gritty form of sandstone known as English, Nova Scotia, Ohio and Huron

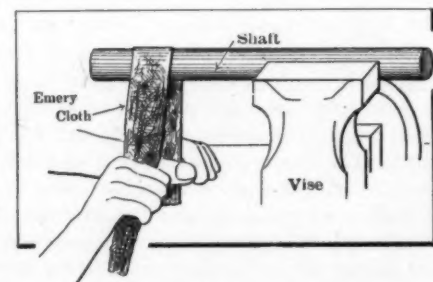


Fig. 2—Rubbing shaft with emery cloth when work is done without a lathe

varieties. The stone should be of uniform composition, fairly soft and coarse, and when used should be revolved so that about 500 linear feet of stone pass the edge of the tool in a minute. This would mean about 80 revolutions per minute of a stone of 2 feet diameter. In the case of a hand-revolved stone it would require a man of very fair strength and endurance to maintain this surface velocity for the length of time required to complete any extensive grinding. Although water is employed on the stone while it is performing its work, it should be turned off the minute

the work is completed and never be allowed to flow upon the stone while it is not in use. The stone should be kept in a warm, dry place, but not exposed to the rays of the sun, as this will harden the stone to a great degree and do it material harm, as it is at its best when soft.

A tool rest, generally clamped to the frame of the grindstone should be provided, against which the work is held while the operation of grinding is taking place. The stone should always be turned toward the operator and the tool to be ground placed against the tool rest. The motion of the grindstone will tend to pull the tool down with it, but the rest will take up this pull, allowing the operator to confine his attention to the edge of the tool.

On the power-driven wheels there is generally a truing device clamped to the opposite side of the frame from the tool rest. When it is desired to true the wheel the device is brought against the face of the stone and held in position by the clamp. When there is no truing device fitted, the adjustment may be made by hand by placing a piece of pipe or an old file edgewise against the wheel, having it rest upon the tool rest and moving it slowly back and forth across the face of the wheel while it is revolving. No water is played on the wheel during this process.

SHARPENING TOOLS—All edged tools require an occasional sharpening to maintain their condition and efficiency. Tools should not be put away while dull, but on the completion of a piece of work if they have lost their edge they should be ground or at least worked upon an oil stone if that is all that is required.

In grinding a tool the grindstone is set

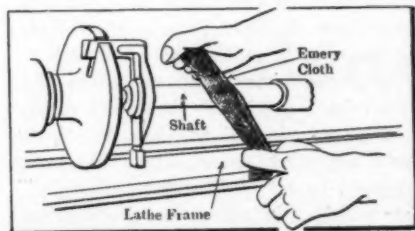


Fig. 3—Method of applying emery cloth to shaft when reducing the diameter

in motion so that it is turning toward the person performing the operation. The tool is then grasped firmly and placed across the tool rest at the proper angle. This angle must be maintained during the whole operation of grinding the tool, as it would be very detrimental to the quality of the edge obtained if the tool were to be shifted a number of times during the operation. The tool rest should be brought very close to the wheel so that there is no possibility of the tool becoming wedged between the stone and the frame in a moment of carelessness or owing to some inequality in the surface of the stone.

After all these precautions have been observed the tool is brought to bear lightly against the stone with the fingers placed in such a way that the delicacy of touch required in careful grinding is obtained. The heel of the edge is made to touch the stone first, and then the tool is tilted up until the correct angle is obtained. The tool is then held steadily at that angle and worked slowly back and forth against the surface of the stone so that any wear on its surface will be made as uniform as possible, otherwise there will be a marked tendency to wear grooves into the stone, which would greatly interfere with the accuracy of the work.

After having ground the tool to the required edge it is plunged into water and then worked across an oil stone or other fine stone which will put a finished edge on the tool. Lathe and special tools require special processes, according to their shape and use.

FITTING OF PARTS—In the careful fitting of parts, which is often necessitated when extensive repairs are undertaken in the private shop, it is sometimes a question whether the more delicate operations should not be sent out to better-equipped shops for more experienced hands to do the work. There is no doubt that in careful fitting, where the work must be exceedingly accurate in order to obtain the best results, the more elaborate tools will make the work much easier to perform. If the fitting of a shaft were taken for example, it would seem that in order to bring it down to correct shape it would first have to be filed, as shown in Fig. 1, and then, after this long, tedious work is finished, a piece of emery would be called into service to finish the work, as shown in Fig. 2. In hand-filing the shaft, the work could be laid across an anvil or a vise and lightly filed while the shaft was continually turned by the hand, in which it is held. After it had been brought approximately to shape by this method, which is depicted in Fig. 1, it would be placed in a vise and a piece of emery worked across the metal to remove the inequalities which would have resulted from the filing process. When using the emery cloth a long strip should be taken, as shown in Fig. 2, and rubbed across the shaft from one end to the other. The shaft should be frequently turned so that the same amount of material will be taken off on all sides. The shaft is then calibrated along the length required and any apparent inequalities removed.

If the same process were to be carried out with a lathe, the operator would merely have to center the piece of shaft to be turned down, set the tool so as to perform the work, and put the lathe in motion. The lathe is so arranged that the tool is carried slowly along the work in a planer parallel to the axis of rotation of the shaft and always at a uniform distance from it. At the end of this operation the shaft will

have been turned down to the thickness desired by the operator. If it is not required to take very much metal off the shaft it is merely necessary to use the emery cloth. The shaft is allowed to rotate at high speed and the emery held against it as shown in Fig. 3. If a fair amount of metal is to be taken off, the cloth may be of the coarse variety and afterward supplemented by a finer quality. In using emery which is coarse, great care must be taken that it is not used too long, for if this is done scratches will be made so deep that they will be found in the finished product. Where great care is not so essential, and still a fairly uniform amount of metal has to be taken off the surface of the shaft, it may be placed in the lathe and rotated,

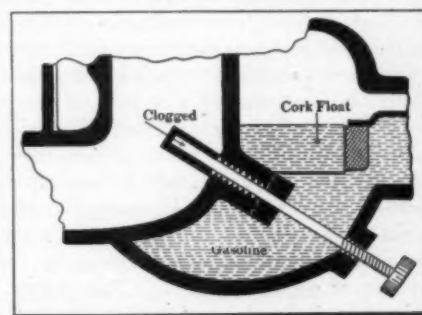


Fig. 4—Section through carburetor, showing needle valve which is apt to clog

with a file held lightly against the surface. Frequent calibration should be resorted to in this case in order that the work be done as uniformly as possible.

There are many other cylindrical parts which may be placed in the lathe for polishing as well as turning down. This is the case only with cylindrical parts, however, as owing to their shape the polisher may be merely held against them as they rotate in order to accomplish the desired result.

WATCH CARBURETOR NEEDLE VALVE—The carburetor needle valve is about the most delicate part of this piece of mechanism, inasmuch as it is very apt to become clogged on the slightest provocation. The ounce of prevention in this case is to carefully watch and strain the gasoline that is placed in the tank. The gasoline outlet pipe will no doubt be provided with some sort of screen to prevent the passage of particles of dirt through the gasoline line, but at times a minute particle will pass through the meshes of the screen and find its way into the valve. A piece of cotton waste will very often become lodged in the needle valve in this way and stop the motor. The needle valve is illustrated in Fig. 4, which shows a section through a carburetor, and the clogging takes place at the point shown in the cut. The needle valve may be removed by unscrewing the knurled handle in a carburetor of this or similar type. A very fine wire is then passed through the orifice in order to free it of the foreign matter.

Digest of the Leading Foreign Papers

SHARPENING OF TOOLS BY ELECTROLYSIS—The author points to the actual industrial uses of electrolysis or electro-etching as an indication that the same principle might be applied extensively for the sharpening of tools, but does not enter upon the question whether the acid would affect the properties of the tool steel as referred to in other recent research work. The effect of an acid on metal is increased when at the same time an electric current flows from the metal into the acid, the current always keeping the metallic surface clean for attack by fresh acid. This desirable current may be generated either by forming a galvanic element in the work itself by the addition of one or more pieces of charcoal and suitable wiring, or else, as has been found much more practicable, by connecting the metal with the positive and the acid with the negative pole of any independent direct current. In electro-etching the mass of metal etched away at any one spot depends not only on the duration of the etching and the acidity of the fluid but additionally upon the amperage per square centimeter which passes through the spot into the acid, and this amperage, which in turn depends upon the resistances in the circuit, cannot practically be brought under control unless an independent current source is used. The time required for a certain desired effect cannot be judged in advance with any degree of certainty. For this reason, and also because the acid affected the charcoal and produced a coat of mud over the work which had to be cleaned off at intervals, the methods used by Barthel in New York many years ago for sharpening flat tools and milling cutters by electrolysis in a bath which generated its own current did not prove altogether successful despite of great ingenuity in the arrangements. The change to the use of an independent battery has been universal, and for most purposes one of two to three volts is sufficient. When the current is thus generated externally there is also no need of using such sensitive material as charcoal in order to obtain a maximum of electromotoric force, but other more sluggish materials can be chosen. Grathwohl, of Herisau, Germany, thus uses lead for the cathode and sulphuric acid of 1.18 specific gravity for his patented method for restoring completely worn out files to usefulness by electro-etching. Hall and Thornton, of Birmingham, have produced sharp points on metal tubes and rods by connecting them with the positive pole of a battery and placing the end to be pointed in the acid solution, the latter being connected with the negative terminal, and then pulling the work out of the bath very gradually. The rods in this way became thinner and thinner toward the end. In the same manner thousands of needles could be pointed at the same time in a single trough by simply draining the acid off very slowly. A further development of tool sharpening by electrolysis is possible when the tool is not immersed in the acid solution but is brought in contact with it only where the etching is required. This may be done as follows: A piece of porous burned clay, shaped as the cutting edge to be produced in the tool, is soaked in the acid solution and connected with the negative pole of a battery and is pressed gently against the tool which is connected with the positive pole. After a little time the forming electrode is removed; the tool is brushed free from the alkaline crust which has been formed by the etching, and the forming electrode is soaked again with the acid solution and is again pressed against the tool. With a machine working on this principle the Electrogravure Company, of Leipzig, has etched whole bas-relief friezes in metal. Burdett, of Hartford, etches ornamental designs and inscriptions into knife blades and metallic surfaces generally by the following method: The surface is painted with a mixture of 101 naphtha, 0.125 kilogram carbonate of sulphur, 2 kilograms powdered resin and 1.5 kilograms of chlorid of copper, and into this coat the de-

sign is pressed by means of a die which before each operation is cleansed in a potash solution. Parts of the coat which are loosened by the application of the die are washed off with water and the whole coat is then painted with a weak solution of ammonia or brine; then a clean smooth metal plate is laid upon it and is connected with the negative pole of a battery while the work is connected with the positive. The electric current now passes exclusively along those depressions or lines in the resin which were made by the die and are filled with electrolyte and, shortly, the design is etched out sharp and deep. The surface is then washed clean with a soda solution. Simple arrangements suffice even for work on a large scale.—Erich Schneckenberg in *Werkstattstechnik*, August.

CEMENTING STEEL WITH OTHER SUBSTANCES THAN CARBON (from an article on the Theory and Practice of Casehardening to Date by the well-known authority, Léon Guillet)—If chromium, tungsten, molybdenum or vanadium could be introduced superficially in iron or steel, tool steels and construction steels of high grade could perhaps be produced at a low cost (the machine work being done on soft material and the quality raised by the introduction of alloys, as carbon is now introduced by the casehardening process). Leaving aside the different false ideas which have gained currency, relating to the employment of nickel salts, of chromate of potassium, etc., it is now being assured us from divers sides that, so far as tungsten is concerned, the problem has been industrially solved. The author does not know either the method followed or the results obtained, he says, but only repeats a rumor persistently heard. [In the United States a large company is in the process of formation which is to undertake the "infusion" of several other alloys besides tungsten, and to transform pieces shaped from common Bessemer steel or even from wrought iron or pot metal into corresponding pieces possessing all the properties which could have been secured at higher cost by using high-grade alloy steels for the manufacture of the parts in the first place; and the company exhibits a large variety of parts and tools, including milling cutters, which have been obtained from many different manufacturers and have been so transformed.—Editor.]

The experiments which the author has made to obtain the penetration of nickel into steel have produced absolutely negative results. He has nicked pieces of steel and has left them in a furnace at 1000° without any effect, even after very prolonged heat. He has also sought to employ "nickel-carbonyl," but the low temperature at which this substance decomposes and the dangers incidental to its use made him abandon these trials. Experiments with iron and aluminum, on the other hand, which were undertaken on the advice of Henry le Chatelier, gave very plain penetrations. A piece of aluminum fitted in the center of a piece of hollow steel showed considerable penetration at a heat of 450°, which is far below the fusion point of aluminum. But it does not seem possible to derive interesting industrial results from this fact. Copper, in very recent tests, gave a slow penetration, recognizable by the microscope, however. All this shows the way to important research, and the difficulty is assuredly to find suitable gaseous compounds or else to make sure by other means of close contact between the steel and the substance one wishes to bring into "solid solution" therewith. These difficulties are in reality the same which are experienced when it is attempted to dissolve pure carbon in iron (instead of using the bonemeal or other casehardening compound).

With regard to other metals than iron, the formation of a solid solution of one metal or substance with another seems theoretically plausible whenever the two substances are com-

pletely miscible. The only actual experiences in this direction which the author can cite are the following: A bar of bronze containing 7 per cent. of tin was fitted closely in a tube of bronze containing 16 per cent. of tin. After heating to 800° for 8 hours, the bronze originally containing 7 per cent. of tin showed a tin content of 9 per cent. (corresponding to the "delta" class under the spectroscope), and the tin content increased toward the joint between the two bronzes, just as pearlite in a cemented steel. Again, a condenser tube of "alpha" brass which had been tinned showed, after a heat which probably did not exceed 150° C., the characteristic "delta" constituent of tin-brasses. The author repeated this experience, heating an "alpha plus beta" brass of 60 per cent. copper after having tinned it, and then saw in the black zone of "beta" the "delta" constituent which is characteristic of the presence of tin. Finally, Mr. Masiny has shown, by the variation in electric resistance, that lead and thallium, when brought in contact, penetrate mutually, beginning at ordinary temperatures, and that the speed of penetration is clearly emphasized at a temperature of 100° C. The industrial process known as "sherardization" belongs in the same class of phenomena. It consists in placing steel forgings or castings in commercial zinc powder at a temperature of 300° C. The result is a "galvanizing" of very pretty patina and very durable, and trials have demonstrated that the process is one of real cementation by the solid (though powdered) zinc, taking place only where the powder and the steel are in real contact.

Only 15 years ago, says the author in summarizing his treatise on casehardening, a trough heated with coke was placed on the floor of the shop and the pieces to be hardened were stuck into a queer powder compounded from cows' horns, hog suet and urine, but it has now advanced to be a scientific process to be practised under close observation of intelligent rules for adapting means to ends.—*Le Génie Civil*, August 5.

ACETYLENE GAS EASY TO IGNITE IN RICH OR POOR MIXTURES—According to experiments conducted by Prof. Eilner, a mixture of air and acetylene gas begins to be explosive at a 2.9 percentage of acetylene, and the explosiveness continues up to a percentage of 64. Other experiments on a much larger scale by the Electrical Society of Bosnia place the low limit for explosibility at 2.5 per cent. to 2.6 per cent., and at 3 per cent. the explosions became violent enough to shake the solid masonry

which confined 11 cubic meters of the gas mixture and had been erected for the purpose of the experiments.—From *La Rivista tecnica d'Italia*.

VIENNA'S FOUR-IN-ONE MUNICIPAL MOTOR WAGON—The municipality of Vienna has acquired a motor vehicle of a new type which can serve as a sprinkling wagon, a fire engine, a street sweeper and as a simple 6-ton truck. To transform the sprinkling wagon into a fire engine it is only necessary to start a separate motor, operating independently of the motor power, and to attach a fire hose to a universal screw plug on the pump. A simple movement lets down the sweepers which operate like the snow ploughs of the street car companies, and when the water reservoir is dismounted, the city has at its disposal an ordinary 6-ton truck.—*Automobile-Aviation*, September 21.

BOOM FOR HEALTH RESORTS BY EXCLUDING THE FLY BREEDERS—"We should like to propose to some landowner who is anxious to found a seaside resort that he should try the experiment of making it into a real health resort by banishing the horse from its precincts. Nowadays public opinion is sufficiently advanced to realize the benefits of air free from impregnations of animal filth, and we believe there are distinct possibilities in a horseless health resort. We do not merely mean possibilities of health, but possibilities of establishing a town which would be appreciated, and to which visitors and seekers for health would betake themselves simply because they would realize that proper precautions had been taken to preserve the air from contamination."—*The Autocar*, Sept. 16.

EUROPEAN AGRICULTURAL INTERESTS DEMAND MOTOR IMPLEMENTS NOWADAYS—The French Association for Motor Agriculture (*Association Française de Moto-Culture*), recently held a competition for agricultural automobiles at Melun. The machines represented were: One tractor of 25 horsepower, which turned over the soil when hitched to a plough with five shares and with equal facility actuated a harvester with three binders; one tractor for heavy work; one winch-truck; one automobile disk-plough; one automobile breaking-plough; two self-propelled hoeing machines and two self-propelled cultivators.—From *L'Automobile Belge*, August 30.

Calendar of Coming Events

Shows

- Oct. 7-14.....Chicago, Ill., Show of Chicago Automobile Trade Association.
Jan. 6-13.....New York City, Madison Square Garden, Twelfth Annual Show, Pleasure Car Division, Automobile Board of Trade.
Jan. 6-20.....New York City, Madison Square Garden, Annual Show, Motor and Accessory Manufacturers.
Jan. 10-17.....New York City, Grand Central Palace, Twelfth Annual Show, National Association of Automobile Manufacturers; also Motor and Accessory Manufacturers.
Jan. 15-20.....New York City, Madison Square Garden, Twelfth Annual Show, Commercial Division, Automobile Board of Trade.
Jan. 27-Feb. 10....Chicago Coliseum, Eleventh Annual Automobile Show under the auspices of the National Association of Automobile Manufacturers. Pleasure cars, first week. Commercial vehicles, second week. Accessories, both weeks.
Feb. 19-24.....Hartford, Conn., Annual Show, Automobile Club of Hartford, State Armory.
March 2-9.....Boston, Mass., Tenth Annual Show, Boston Automobile Dealers' Association, Inc.
Meetings, Etc.
Nov. 20-24.....Richmond, Va., First American Road Congress, under auspices of American Association for Highway Improvement.
Nov. 23.....Road Users' Day, under direction of Touring Club of America.
Jan. 18-20.....New York City, Annual Meeting of the Society of Automobile Engineers.
Race Meets, Runs, Hill-Climbs, Etc.
Oct. 7.....Danbury, Conn., Track Races, Danbury Agric. Soc.

- Oct. 7.....Springfield, Ill., Track Races, Springfield Automobile Club.
Oct. 9-13.....Denver, Colo., Reliability Run, Denver Motor Club.
Oct. 10.....Bedford, Ind., Hill Climb.
Oct. 11.....Oklahoma City, Okla., Reliability Run, Oklahoma State Automobile Association.
Oct. 12-13.....Peoria, Ill., Track Races, Peoria National Implement and Vehicle Show.
Oct. 14.....Santa Monica, Cal., Road Races.
Oct. 14 (to 25)....New York City, Start of the Annual Glidden Tour, en route for Jacksonville, Fla.
Oct. 16-18.....Harrisburg, Pa., Reliability Run, Motor Club of Harrisburg.
Oct. 21.....Atlanta, Ga., Track Races.
Oct. 27-Nov. 3....Chicago, Ill., Thousand-Mile Reliability Run, Chicago Motor Club.
Oct. 31.....Shreveport, La., Track Races, Shreveport Automobile Club.
Nov. 2-4.....Philadelphia, Reliability Run, Quaker City Motor Club.
Nov. 3-4.....Columbia, S. C., Track Races, Automobile Club of Columbia.
Nov. 4-6.....Los Angeles-Phoenix Road Race, Maricopa Auto Club.
Nov. 9.....Phoenix, Ariz., Track Races, Maricopa Automobile Club.
Nov. 9, 10, 12....San Antonio, Tex., Track Races, San Antonio Auto Club.
Nov. 27.....Savannah, Ga., Vanderbilt Cup Race, Savannah Automobile Club.
Nov. 30.....Los Angeles, Cal., Track Races, Motordrome.
Nov. 30.....Savannah, Ga., Grand Prize Race, Savannah Automobile Club.
Dec. 25-26.....Los Angeles, Cal., Track Races, Motordrome.

Foreign Fixtures

- Oct. 12-22.....Berlin, International Automobile Exhibition.
Nov. 3-11.....London, Eng., Olympia Show.

THE AUTOMOBILE

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No. 14

THE CLASS JOURNAL COMPANY

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Our Babies

THE progress of automobile design in America has been hampered by the babies of the engineers, by the babies of the factory heads and by the babies of some influential stockholders. There is scarcely an engineer but has had his babies in the field of design. Each has had his pet designs. One engineer started out with a method of controlling valves in the early days of the industry. He conceived the idea and consequently held on to it until the wolf was near the door. Sheer necessity then made him give it up. The giving up of it was like amputating a part of himself. He had nourished it from its inception; to him it was the only method of control that could be right; it was the type that would exist when all others were forgotten; and he could see no other one. Other makers controlled in the carbureter; the public of France at that time demanded throttle control; it was gaining on every hand; but the engineer stuck to his baby until it was a case of give it up or get out. He deserted it.

The babies of the automobile industry have not all lived in France—America has had a good many of them. One engineer had his own type of axle; he took out the patents on it; he manufactured it; he introduced it, and he died for it. He had eyes for it and for nothing else. The design was passably good; it gave a measure of satisfaction; but it was not what the masses wanted. The engineer dictated the policy of the factory; he was the Alpha and Omega of everything pertaining to engineering in that company, and the company stuck to the axle and to the engineer until its sales dwindled and dwindled. One after another of its best men joined other more progressive companies, but still the engineer and the factory stuck to the baby. At last money became so scarce that it was death or the baby; then, and only then, was the baby dropped. Since then the company has been slowly gaining. It learned the lesson: "Do not stick too long to the baby."

One factory manager preferred complete business extinction to the surrender of his baby. It was a method of control and body design. It was excellent; from the

scientific viewpoint nothing better could be wanted; but the people did not buy it. The business grew smaller and smaller; soon the factory force dwindled to a mere handful of workmen; new capital was looked for and secured—but the baby was retained; a month or so later the low mark was reached; a receivership ended the agonies. It was a double funeral.

One concern started in the manufacturing field of cars with triplets. It had a special ignition scheme, different from all others, and it took a salesman 15 minutes to explain it. The system worked well, but it was roundabout and had many needless parts. The car also had a cantankerous method of lighting the headlights from the seat. It, too, was different. According to the inventor it was going to revolutionize car lighting—but it failed. This automobile had a self-starter; self-starters are good, everybody is after them to-day, but in those days nobody wanted them. The engineer was going to make the people not only want them but use them—he failed. The company stuck to all three babies. The engineer had invented them all; they were dear to his heart and he would not give them up. The company soon afterwards failed.

But the babies of the automobile business are not all gone yet. There are scores of them still living and being guarded fearfully by the engineer, or the factory head. Some of them to-day are in the form of carburetor schemes; others are frame designs; some are lubrication contrivances; some are gearset eccentricities; some are brake designs; some body whims, and others steering features. These babies are all expensive. In many cases it has necessitated special machinery to manufacture the special parts. This machinery has cost money and so is an expense. The biggest expense of all, however, is in the expenditure of energy in selling the article. There are companies to-day that have their salesmen spend 25 per cent. of their energy in convincing the buyer on one point, the imagined value of the baby. This is poor policy; it is short-sighted policy. This policy was all right a few years ago when selling cars was confined to filling out orders, but it is not all right to-day. This is a day of competition. This is a day when salesmanship is needed and the best salesmanship will not sell machines with inferior designs. What is needed to-day is good design and not the whims of an engineer.

There are more whims and babies in many American cars than in many of the European types. The foreign car may show much in the line of versatility of design, but the whim is not so apparent. The reason is at hand: The majority of the big foreign factories have a corps of graduated engineers—they are not so scarce as in America. These engineers meet together and they meet with the directors of the company. They meet in hot discussions. One engineer may have his babies; he wants his pet designs incorporated into the car; the other engineers discuss and oppose it, and the net result is that pet ideas are eliminated to a much greater extent than in a factory, like so many of the American factories, where the engineer is the only person who has anything to say in the field of design. He has to be a gilt-edge engineer who can dictate all that is best for a car. He may be an expert in gasoline engine design but a pigmy when it comes to designing a steering gear; his principles may be excellent for brake design but wrong in gearset work. So it is all through the car which is the product of one man; the car is certain to have its weaknesses. A corps

of three or four engineers is always much better than one. These engineers can at least see the design, under question, from three or four different angles; one should be able to pick out some weaknesses that the others might pass over; a second one will be able to suggest some detail that when added will be an improvement; and so through the entire car. If a factory cannot support its corps of engineers it might be able to support a consulting engineer, or aid in supporting one. The calling in of other physicians is considered the best policy in cases of dangerous illness. Why cannot the same thing be tried out in car design? Some of the most progressive makers are doing it to-day and they are profiting and saving money by it. More will be doing it before two years have elapsed.

It is cheaper to employ two or three engineers than it is to pull a design to pieces every year or so. It costs money to make dies for forgings; it is expensive to change the cylinder designs and have to alter the patterns;

it is expensive to make new jigs each season, and it is expensive to buy new machinery or alter the old to take care of the annual changes. Many of the changes that are imperative each year are due to an overworked engineer, or to one with his pets. With the board of directors of the factory it is short-sighted policy to let a single engineer dictate, when the better judgment of many of the board says that certain changes should or should not be made. There are cases on record to-day where engineers are obstinate. They will not change because some other engineer has beaten them to a certain design. Such persons are equally dangerous. The solution is a corps of engineers or some good consulting engineers. Our factories are going to come to one or the other very soon. It is imperative with some of them; with others the policy will be dictated by good judgment. There are not a few wrecks on the sea of automobiling to-day, due solely to an engineer running away with the factory. The wise, far-seeing factory head is watching this problem.

S.A.E.'s Foreign Trip

ARRANGEMENTS for the foreign trip of the Society of Automobile Engineers are occupying an important part in the thoughts of members of the organization. So far 37 have signified their intention to make the trip if possible and about half that number have definitely arranged to go. At the meeting of the organization Wednesday a tentative program was framed covering a visit of 23 days, as outlined previously. Howard E. Coffin will make an address in London on chassis design.

The place in which the annual meeting will take place in New York was considered and it is likely that the Automobile Club of America will be chosen again.

Reeves Outlines Scope of Industry

Alfred Reeves, general sales manager of the United States Motor Company, in a lecture delivered before the West Side branch of the New York Y. M. C. A. recently, gave out the following statistics with regard to the automobile industry:

"155 factories are now beyond the experimental stage and producing 50 or more cars a year.

"65 companies are now producing motor trucks or commercial vehicles exclusively.

"405,000 cars registered as being in active use in the United States at the present time, with probably 50,000 more cars used where State registration is not required.

"100,000 cars sold during the past twelve months.

"210,000 pleasure cars scheduled for the next twelve months.

"9,000 trucks and delivery wagons now in use.

"18,000 trucks and package delivery wagons to be made in the next twelve months.

"11,400 dealers selling cars in every town of any importance in the country, with a very much larger number of garages.

"82,166 motor cars registered in New York State.

"32,400 chauffeurs registered in New York State.

"\$20,000,000 in motor cars and parts will be exported during 1912, based on Government figures for the first seven months."

Outdoor Show at Mound City

ST. LOUIS, Oct. 2—An out-of-doors exhibit marked the opening of the fifth annual Automobile Show of the St. Louis Manufacturers' and Dealers' Association, which began at Forest Park Highlands, a summer amusement resort, Monday night. The early date of the show is due to the fact that the Veiled Prophet Festival is being put on the same week.

Fire-Fighters Parade

THE budget display of automobile fire apparatus owned by the city of New York was held Tuesday in front of the City Hall. Eighteen pieces of apparatus were in line, including all those specified and described in a recent article in THE AUTOMOBILE. Aside from the actual fire-fighters there were a number of runabouts and raceabouts used by battalion chiefs and executive officers of the department.

Mayor William J. Gaynor reviewed and inspected the display. The present motor equipment of the fire department is a nucleus about which will be assembled a collection of at least 150 pieces of power-driven apparatus by January 1, 1913.

Louisville Plans for Fire Automobiles

LOUISVILLE, Oct. 2—If the chief of the Louisville Fire Department, Timothy Lehan, has his way, the present fire-fighting equipment will be replaced by automobile apparatus. The contemplated change will be made as soon as the horse-drawn vehicles now in use wear out.

Louisville has twenty-one fire stations. At each an engine and hose reel is located. Besides this apparatus there are five hook-and-ladders and a water tower. The only motor vehicle now in use by the department is the one used by the chief. The street railway company, the salvage company and the lighting company all answer alarms in motor-driven vehicles.

According to the chief, one of the advantages of the motor apparatus is that the engine and hose cart can be combined, and some companies are now turning out a successful combination consisting of engine, hose cart and chemical engine.

Knight Entertained at Indianapolis

INDIANAPOLIS, Oct. 2—Charles Y. Knight, inventor of the silent Knight sleeve-valve motor, was the guest of motor car men at the Columbia Club in Indianapolis, on the night of Sept. 29. The occasion was a dinner given in Mr. Knight's honor by Hugh H. Hanna, president of the Atlas Engine Works, which has been licensed to build the Knight motor for the trade in the United States.

Mr. Knight spoke at length of the inception and development of his motor. F. E. Lonas, legal representative of the Knight & Kilbourne Company, was also among the speakers. Mr. Knight's father resides in Indianapolis, and he spent a few days with him, during which he consulted with the officials of the Atlas company relative to the building of the Knight motor.



AKRON, O.—More than 100 representatives of the sales force of the Firestone Tire & Rubber Company were in annual convention here some days ago. President Firestone in his annual address submitted figures which indicated that last year's increase in sales was the greatest in the company's history. The above photograph was taken in front of the company's immense new plant.

SAN FRANCISCO—The Frank O. Renstrom Company, local distributors for the Regal and Kline lines, has taken the coast agency of the Dart delivery wagon.

CLEVELAND, O.—The Standard Welding Company has opened a branch office at Chicago. The line was formerly handled by L. F. McClernan & Co. in that city.

COLUMBUS, OHIO—The Cummins Auto Sales Company, of North Fourth street, Columbus, Ohio, has closed the agency for the Everitt in six counties in Central Ohio for 1912.

ZEELAND, MICH.—The Zeeland Automobile Company has purchased a new location at Main and Washington streets. The company will move its old building to the new site immediately.

GOSHEN, IND.—Teegarden & Putt will occupy their new garage in that city this month. The new garage is located north of Hotel Hascall, and work is being rushed as rapidly as possible.

INDIANAPOLIS—Charles E. Coots, chief of the Indianapolis Fire Department, has asked the Board of Public Safety to purchase gasoline runabouts for each of the four assistant fire chiefs.

CINCINNATI, O.—The Heilman Motor Car Company is building a garage in Cummins-ville. The new place will have facilities for handling 40 cars. The company sells the Haynes and Cartecar.

PORTLAND, ORE.—One of the most up-to-date and finest appointed garages here was recently completed for Thompson & Nation, Speedwell agents. It is located at Couch and Fourteenth streets.

SOUTH BEND, IND.—The Simplex Motor Car Company, of Mishawaka, Ind., has decided to enter two Amplex cars of the latest model at the open-air auto show which will be held in St. Louis, in October.

DAYTON, O.—H. P. Michael, formerly with the Miami Valley Automobile Company, has opened an agency at 16 South St. Clair street, and will handle the Hupmobile exclusively. He will install also a repair department.

SEATTLE—Arrangements were concluded last week by Paul McMullen, Oakland manager for the Hudson and Hupmobile cars, for the construction of a fireproof building at 1511 Broadway, to be completed in November.

DAYTON, O.—H. J. Myers, formerly sales agent for the Baker electric in this city, has been given the agency for the company at Cleveland. His territory includes Ohio, Southern Michigan, Western New York and Western Pennsylvania.

WEST BEND, WIS.—The West Bend Aluminum Co. has been incorporated here, with a capital of \$14,000. The company has established an aluminum factory in the old Kress factory buildings. Andrew J. and Edwin Pick and Martin Walter are the promoters.

MARIETTA, OHIO—The Pioneer Motor Car Company, recently incorporated with a capital stock of \$18,000, will soon start the erection of a three-story brick building, to be used as salesrooms and garage as well as a repair shop. The building will be erected on Front street, and will be 190 by 58 feet.

OKLAHOMA—Citizens of Grady County, Oklahoma, propose to build their proportionate part of the State road crossing that county in 1 day, October 2. A holiday has been declared for that day, and practically every man of the county has agreed to work that day on the road.

COLUMBUS, OHIO—The Rusk & Hallock Company, North Fourth street, Columbus, Ohio, has closed the agency for the Warren-Detroit for 1912, covering six counties in Central Ohio. The counties in the territory are Franklin, Delaware, Pickaway, Fayette, Madison and Union.

ROANOKE, VA.—The third annual convention of the South Appalachian Good Roads Association will be held here October 4-5. Logan Waller Page, Governors W. H. Mann, Cole L. Blease, Augustus E. Willson and a number of prominent engineering experts are scheduled to speak.

NORTH JUDSON, IND.—The Stark County Garage & Machine Works is erecting a garage here which will be the largest in Stark County. The proprietors are A. C. Ross, of Winamac, and G. A. Spohner, of North Judson. It is expected to have the building completed by the last of October.

DAYTON, O.—George L. Baker and Frank L. Baker have opened an auto livery service at 122 South St. Clair street. George Baker will remain in charge of the retail sales department of the Speedwell Motor Car Company, the new venture having no direct connection with his other work.

SAN FRANCISCO—One of the most interesting automobile changes here recently was the switching of the Apperson agency in Northern California from the Auto Sales Company to the Weeks-Covell Automobile Company, who are also the new Northern California distributors of the Pathfinder and Parry.

PHILADELPHIA—The annual meeting and banquet of the Automobile Club of Delaware County will be held in the new Armory Building in Chester, next Wednesday evening. New officers and directors are to be elected. The organization dates from 1906.

PITTSFIELD, MASS.—The Cortland Motor Wagon Co., formerly of Cortland, N. Y., is in its new plant at Pittsfield, Mass., and have the 1912 output well under way, the first car being on the road. The officers are as follows: R. H. Jadwin, president; Tracey A. Rudd, vice-president; Edson T. Starks, secretary and treasurer.

DAVENPORT, IA.—Hite D. Bowman, agent for the Rauch and Lang electrics, Stearns and Chalmers cars, has just completed a \$7,000 addition to his garage at Fourth avenue and Oak street. It is to be used exclusively as a place in which to charge, house and repair electrics. A workshop has been installed on the second floor.

GRAND RAPIDS, MICH.—The Palmer Sales Company has secured space with the Hupmobile garage on North Ionia street. Remodeling is going forward rapidly at the Overland Sales Company garage on Island street. George P. Dowling will become the Buick factory's territorial representative for Kent, Ottawa and Allegan Counties.

VANCOUVER, B. C.—Dr. Chas. G. Percival, of New York, in the Abbott-Detroit "Bull Dog," has reached this city, with a total mileage of 32,112 miles to his credit on his trip around the world. He has successfully completed the first authentic trip along the route of the Pacific Highway, from Tia Juana, Mex., to Vancouver, B. C.

MONTREAL—The Hupp Motor Car Company, which has for some time been assembling cars in leased premises at Windsor, Ont., has closed a deal for the purchase of a site including a little more than 3 acres. The company will erect two factory buildings at a total cost of about \$525,000, and will start with a force of 150 to 200 men.

WASHINGTON, MO.—At the Franklin County Fair, which was held last week, the Crow-Elkhart car owned by Dr. Otto L.

Muench, was awarded first prize for beauty of decoration, which consisted of 6,000 roses, ranging from deep red at the bottom to pink and white at the top, surmounted by a pair of butterflies driven by a little fairy.

ATLANTA, GA.—J. E. C. Edsall, representing the Staver-Chicago car, reached Atlanta this week after a round-about 2,500-mile trip from Chicago. He will for the present make his headquarters in Atlanta and will establish agencies in Georgia. There is reported to be a possibility that a Staver-Chicago branch may be opened in Atlanta.

ATLANTA, GA.—E. P. Horton, formerly representative of the United States Motor Co. in Syracuse, has been transferred to the Atlanta branch, and will hereafter have charge of the United Motor Atlanta Co. L. E. Kloeber, who has been manager of the Atlanta branch for some time past, will soon be transferred to some other U. S. Motor branch.

COLUMBUS, OHIO—The Hudson Sales Company, North Fourth street, Columbus, Ohio, has taken the agency for 1912 for the Whiting. The territory covers 16 counties in Central Ohio. Sub-agencies have been placed as follows: Springfield, Gaither Auto Co.; Circleville, Mader Auto Co.; Logan, Gage Automobile Co.; Newary, Charles U. Stevens.

COLUMBUS, OHIO—B. F. Myers, connected with the firm of Rusk & Hallock, has secured a patent on a spring shield which will be manufactured in Columbus, Ohio, by a corporation to be organized in the near future. The idea is to have pieces of heavy felt, containing oil, bound next to the spring by a leather casing which is laced from either axle.

AKRON, OHIO—The Olds-Oakland Company, of Cleveland, Ohio, has established a permanent agency for the Oldsmobile and Oakland lines with the Portage Motor Car Company, of Akron. D. W. Thompson, manager of the Portage Motor Car Company, will have personal charge of the distribution of the Oldsmobile and Oakland in Akron and vicinity for 1912.

SOUTH BEND, IND.—Montgomery County, Indiana, has some of the finest roads of the State. It has 134 improved roads, built of gravel or crushed stone. These roads were all constructed under the 1905 road law. The cost of constructing the gravel roads is from \$2,000 to \$2,300 per mile, while the cost of constructing the stone roads is from \$3,500 to \$4,000 per mile.

SYRACUSE, N. Y.—The third annual sociability run of the Syracuse *Herald* will be held Saturday, October 7, with Mayor Edward Schoeneck as an honorary referee. It is expected that more than 200 cars, many of them driven by women, will participate. A 60-mile run through a picturesque farming country southeast of Syracuse has been arranged, the turning point being at Tully.

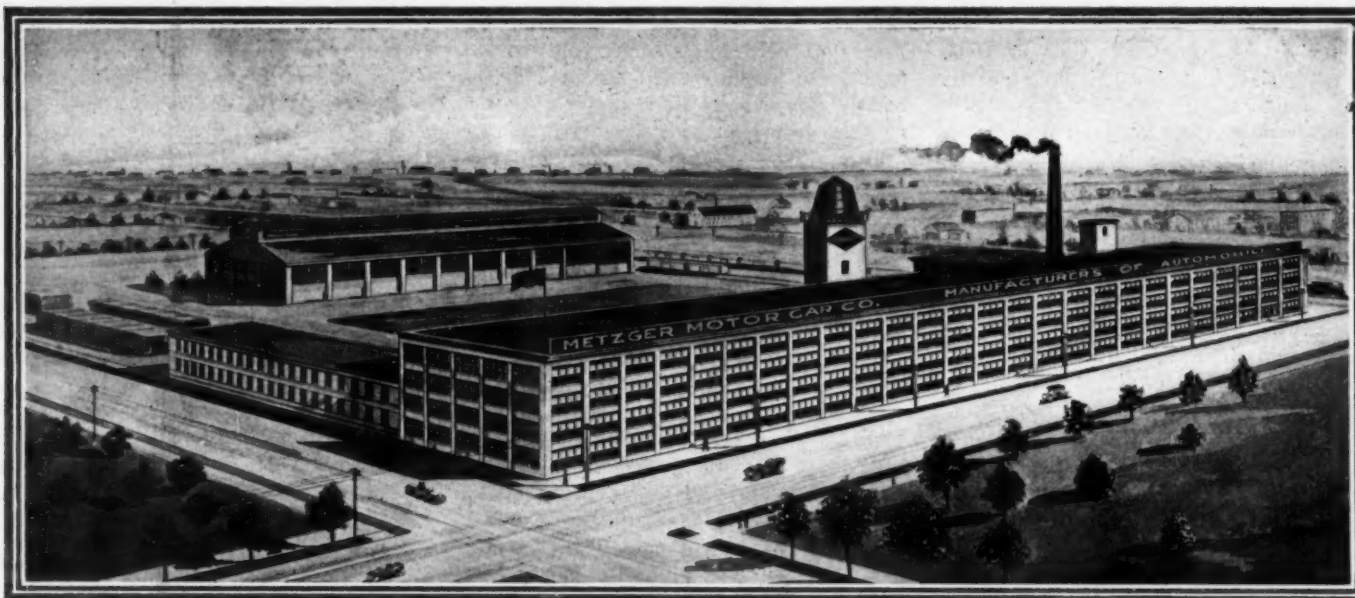
DAVENPORT, IA.—The Buck Motor Car Company, agent for the Packard cars, Packard truck and Detroit electrics, has just moved into a new \$13,000 garage. The new Packard and Detroit electric headquarters in Davenport is 45 by 140 feet in dimensions, constructed of terra-cotta and concrete with brick front, with handsome offices furnished in oak and a show room with a capacity of ten cars.

MILWAUKEE—H. L. Kuelling, C.E., University of Wisconsin, '06, has been elected Highway Commissioner of Milwaukee County, Wis., under the new State aid for highway improvement law. As County Highway Commissioner he will supervise the expenditure of an appropriation of \$100,000 made by the Milwaukee County Board of Supervisors for road work, which draws an additional \$75,000 from the State Treasury as State aid.

SAN FRANCISCO—One of the latest additions to Automobile Row is the Auto Tire Company. This is a branch of the New York firm of that name, which has its subordinate houses throughout the country. The San Francisco house has been established by R. A. Demarest, general manager of all branches. Mr. Demarest has lately established a similar branch house in Los Angeles. The San Francisco house will be in charge of N. C. Dunham.



Panoramic view of a recent tour in California in which only KisselKars took part. There were 22 cars in the 200-mile tour



New building of the Metzger Motor Car Company, at Detroit, Mich., now in course of construction. It is four stories high and 550 feet long

PHILADELPHIA—A meeting of the Board of Governors of the Automobile Club of Philadelphia was held this week, at which twenty-five new names were added to the membership roll and general plans for the proposed new clubhouse and garage of the organization discussed. It is announced that work on the latter will be started before snow flies. The treasurer's report showed the club to be in excellent financial condition.

LOS ANGELES—One of the most novel automobile displays ever projected in the country is under way under the direction of the Los Angeles Order of Mystic Shrine. The automobile show will be held at the Shrine Auditorium, November 6 to 18. Twenty Los Angeles dealers have taken space for the show. A popular voting contest will be held, at which an automobile will be given away.

SYRACUSE, N. Y.—Syracuse dealers in motor trucks are now waging a campaign of education among users upon the danger of the combination of overloading and fast driving. The argument is being made upon these three points, non-observance of which the agents contend seriously menaces the industry: 1. Mechanism suffers when normal carrying capacity is exceeded. 2. Tires wear down more quickly. 3. The life of a truck is shortened by its hard usage.

LOS ANGELES—A new automobile truck factory is to be built here. Announcement was made during the past week of the concern, which will be known as the Moreland Truck Company, organized by W. L. Moreland. The plant will be in operation in 60 days, according to the announcement, and will turn out what is known as a distillate truck from 1 to 5 tons capacity. The officials of the company are R. H. Raphael, president; C. Kubeck, vice-president; Sheldon Morse, secretary and treasurer, and W. L. Moreland, manager.

MILWAUKEE, WIS.—The Pauly-Bruce-Goldaker Co. has been organized to handle the Stoddard-Dayton line in Wisconsin. The State agency formerly was in charge of the McDuffie Automobile Co., of Chicago and Milwaukee. The Stoddard garage at 141-145 Eighth street, is now occupied by the Hickman-Lauson-Diener Co., State agent for the Ford, and the new Pauly company has taken the former Ford headquarters at 222-224 Fourth street.

PORT HURON, MICH.—The Havers Motor Car Company has closed a contract with one of the largest motor concerns in the country for the building of the Havers "Six" motors for the coming season. The contract amounts to approximately \$340,000. The company has been occupying about one-half of the plant formerly used as the Malleable Iron Foundry, and alterations are now under way that will make it possible to use the entire plant the coming season.

SYRACUSE, N. Y.—A number of automobilists and dealers from this city plan to accept the invitation of Secretary of State Lazansky to meet with autoists from all over the State at Albany on October 9, to discuss means of increasing interest in automobile touring. Representatives from many Eastern States will also be present, and a uniform statute for non-resident touring privilege will be discussed. The Touring Club of America has been agitating the matter.

MILWAUKEE.—The Milwaukee Automobile Club on Saturday evening, September 30, held the largest stag party since its new clubhouse on the Blue Mound road, at Cottrell avenue, was opened. More than 500 members and their friends participated. The stag was the second of a series to be held during the fall and winter to stimulate interest in the club among motorists who are not yet members, and which is

part of the general campaign to make the membership 1,000 before January 1.

OKLAHOMA—The 800-mile route of the Oklahoma reliability run for 1911, which begins October 12, passes through some sections of the State where automobiles are seldom seen, and J. L. McClelland, pilot, who donated the services of his "Hudson 33" as the pathfinding car, states that all along the route the party was besieged by prospective purchasers. In order to give the entrants a chance to meet the prospects, the route book has been made up for short runs, putting the contestants into controls each day in time to talk business.

MISHAWAKA, IND.—The Fostoria Aluminum Manufacturing Company has changed its name to the American Casting Company. The company recently moved to Mishawaka from Fostoria, Ohio, and manufactures automobile castings. The company's plant will be re-equipped with considerable new machinery. At a meeting of the directors held recently the following officers were elected: W. H. Rockoff, president and treasurer; W. H. Gilbert, vice-president, and B. E. Rockoff, secretary. The company expects to operate its plant on a larger scale and is widening its scope of operations.

BOSTON—The annual reunion of the Velie branch house managers, agents, heads of the service stations and salesmen throughout the country, will be held at the Velie factory in Moline, Ill., October 9-15. The new Velie 1912 models will be shown for the first time and questions of interest in the automobile industry will be taken up by the various Velie representatives. The N. E. Velie branch will be represented by Walter B. Johnson, Essex Junction, Vt.; George H. Snell, of Attleboro, Mass.; Arthur Beharrell, of Lowell, Mass., and Harold D. Bornstein, of the Velie Boston branch.

CLEVELAND—The next annual meeting of the Gas and Gasoline Engine Trades Association will be held in Cleveland December 5-8.

DETROIT—The Herreshoff Motor Company is preparing to move into its new quarters on Woodward avenue, between Belmont and Trowbridge avenues.

OMAHA—The Kirkland-Hicken Company has been formed to handle fireproof portable garages and pumping machinery in Nebraska, Iowa, South Dakota and Colorado.

SYRACUSE, N. Y.—W. H. Emond, chief designer of the Franklin company, has left for Europe where he will study foreign designs. He will visit France, Germany and England.

WORCESTER, MASS.—The Stearns-Knight car agency has been taken over by the Worcester Motor Car Company which, with the Franklin, now has an excellent display of 1912 models.

DETROIT—The Ford Motor Company has announced that the company would build 75,000 cars for 1912. Besides the model T fitted with various body styles, the company will put out a new light delivery wagon.

HENDERSON, N. C.—The Corbitt Automobile Company, recently incorporated for \$250,000, will take over the automobile department of the Corbitt Buggy Company. The company announces that the 1912 production will be about 500.

GRAND RAPIDS, WIS.—The Commercial Club of Grand Rapids, Wis., practically has obtained sufficient subscriptions for stock in the proposed Crowe Motor Car Company, to make certain the establishment of the plant in this city.

WORCESTER, MASS.—The Atterbury Motor Truck Company, of Buffalo, has opened a branch in this city, at 735 Main street, where repairs will be made and where a large salesroom is now being fitted for a display of many models for commercial use.

MINNEAPOLIS, MINN.—Walter D. Rightmire, for several years associated with the automobile trade in Minneapolis, has open-

ed a branch at Duluth, where he has secured the Iron Range as a territory for the Packard line. He has installed a service department.

INDIANAPOLIS, IND.—Dr. H. L. Lathrop has resigned as treasurer of the Henderson Motor Sales Company, Indianapolis, and has been succeeded by his son, H. C. Lathrop. O. W. Seymour and E. E. Kleinmeyer have just been added to the local sales department in Indianapolis.

DENVER—The Lozier Six, which was designated by the Denver Motor Club as the pathfinder for the Denver Times Reliability Contest, which the club will supervise October 9-14, returned to the city on Thursday, having completed its work of routing the tour. The route selected is 867 miles long.

NEW YORK—R. J. Laciari has been appointed general manager of the New York branch of the Hupp Corporation which has just leased the building at 1989 Broadway, formerly occupied by the Carhartt Sales

Company. The entire building will be devoted to the display of the "R. C. H." automobiles and of the Hupp-Yeats electric cars.

WORCESTER, MASS.—Local business men with the cooperation of the Worcester Board of Trade are making determined efforts to have the United States Motor Company locate its proposed special factory, to manufacture parts of automobiles, in this city and to that end several excellent factory sites have been offered the concern.

MINNEAPOLIS, MINN.—Minneapolis is afforded an opportunity to secure a large automobile-parts manufacturing plant provided sufficient inducements are offered the United States Motor Company. B. E. Stimson, manager of the United States Motor Company, says that the concern is planning a large factory to be located in the Middle West at once and he suggests that this city make an effort to have it placed here.

Automobile Incorporations

AUTOMOBILES AND PARTS

ALBANY, N. Y.—Tri City Motor Company; to deal in automobiles.

ALEXANDRIA, VA.—The B. F. Board Motor Truck Co.; capital, \$100,000.

CHARLESTOWN, S. C.—The Robinson Automobile Co.; capital, \$10,000. Incorporators: J. T. Robinson and B. F. Robinson.

COLUMBIA, S. C.—The Gregory-Conder Motor Co.; capital, \$20,000.

DALLAS, TEXAS.—Overland Automobile Co.; capital, \$25,000; to handle automobiles. Incorporators: W. W. Taxis, D. T. Finley and F. M. Bannell.

EL PASO, TEXAS.—Rio Grande Automobile Co.; capital, \$5,000. Incorporators: Max Moye, W. F. Carter, Jr., and John M. Wyatt.

LAFAYETTE, IND.—Ross Machine Co.; capital, \$15,000; to manufacture automobile parts. Incorporators: David E. Williams, C. Linn and Edward A. Ross.

NEWARK, N. J.—Blair Manufacturing Co.; capital, \$300,000; to build automobiles. Incorporators: Frank M. Blair, John R. McCune, Willis A. Robins, Edwin C. Wright and Harry H. Baird.

AUTOMOBILE GARAGES AND ACCESSORIES, ETC.

CAMDEN, N. J.—American Roller Bearing Co.; capital, \$500,000; to manufacture roller bearings. Incorporators: V. A. Murray, L. A. Myers and D. Bellinger.

COLUMBUS, OHIO.—Borland Manufacturing Co.; capital, \$150,000; to manufacture automobile wheels, automatic pipe wrenches and other tools. Incorporators: J. Archer Borland, G. W. Borland, G. A. Hoffelder, E. W. Habermass, H. L. Hogan and Otto Klein.

MEMPHIS, TENN.—The Ozburn Automobile Supply Co.; capital, \$15,000. Incorporators: N. F. Ozburn, W. J. Shay and W. P. Armstrong.

NEW YORK, N. Y.—Higrade Auto Tire Sales Co.; capital, \$50,000; to manufacture and deal in tires. Incorporators: A. Foshay, H. Neubardt and R. Goldman.

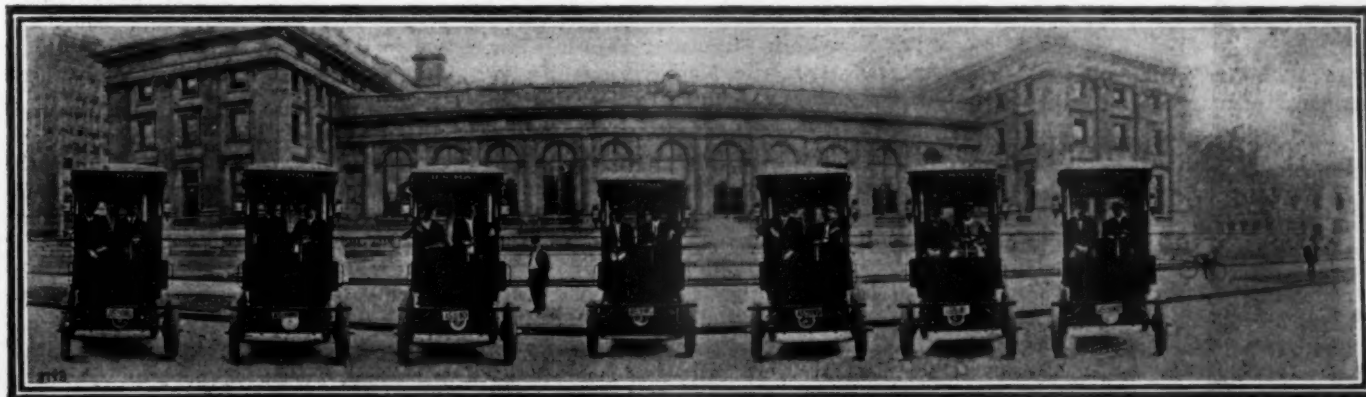
NEW YORK, N. Y.—Senora Motor Horn Co.; capital, \$50,000; to manufacture automobile signals and supplies. Incorporators: Russel Goldman, A. Foshay and Helen Neubardt.

NEW YORK, N. Y.—The Griffins Automobile Supply Co.; capital, \$100,000; to handle automobile supplies, etc. Incorporators: Carl S. Brown, Frederick Kopper, Jr., and Thomas H. Griffins.

PADUCAH, KY.—Kentucky Auto & Machine Co.; capital, \$5,000; to deal in automobile supplies. Incorporators: F. M. Fisher, R. G. Fisher and W. F. Paxton.

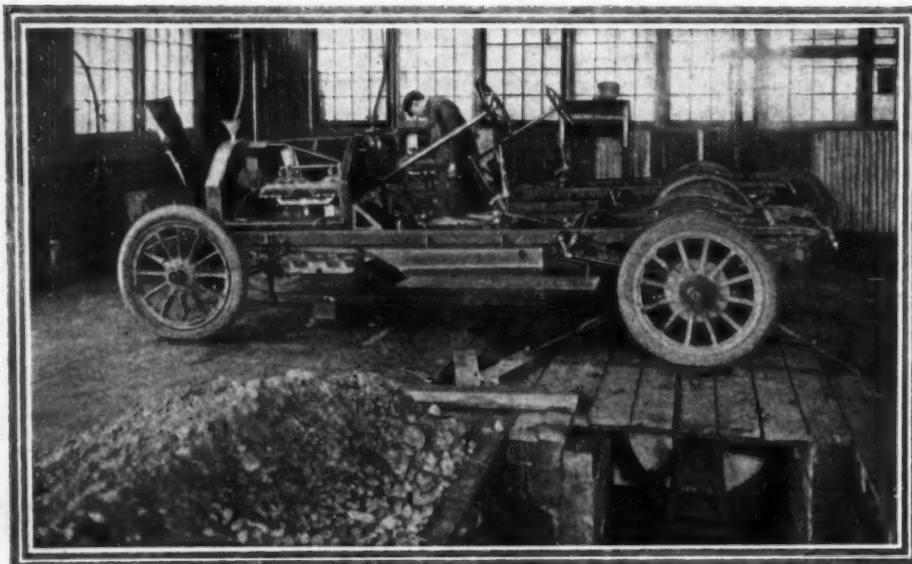
SHAWANO, WIS.—Frogner Auto Co.; capital, \$5,000; to handle a garage.

SPRINGFIELD, ILL.—Reliable Tire Repair Co.; capital \$2,400; tire repairing. Incorporators: John V. Leslie, George Haas and Bert A. Fritz.



Battery of seven United States mail wagons delivered by the Waverley Company for use in the Post Office service in St. Louis

OF INTEREST *to the* INDUSTRY



DAYTON, O.—In the testing department of the Speedwell factory the bearings were formerly run in by raising the rear wheels on a revolving drum. The motor is started and the gears engaged so that the rear wheels revolve on the drum—a brake on the latter providing friction equivalent to that of the road surface. An improvement has recently been effected by lifting the rear axle so that the wheels stand clear of the floor. Then the live split rear axles are drawn out, and axles with sprockets substituted. Coupling the sprockets by chain drive to a shaft provided with sprockets and brake, the same result is accomplished without tire wear. This method of testing suggests that a farmer, by the use of a similar contrivance could use his motor car to furnish power for pumping and running various farm machinery when the car is not in use on the road.

DETROIT—The T. Eaton Company recently completed negotiations with the Lozier Motor Company for the sales rights of the Lozier in Ontario.

OIL CITY, PA.—E. M. Bowen and G. C. McClelland have opened the West End Garage at Oil City in the fireproof building Front and Moran streets.

SYRACUSE, N. Y.—W. E. Hookway has taken over the agency for Atterbury trucks, 1,500-pound delivery wagons and 1-ton trucks, along with the Reliance line of heavy trucks.

SYRACUSE, N. Y.—J. E. Bristol, of the United Motor Syracuse Company, who has just finished a successful tour of Northern New York in the interest of the Maxwell runabout, reports that he now has also the agency for the Samson motor truck.

SYRACUSE, N. Y.—E. F. Chaskel, formerly in the automobile business in New York, has established himself with the National Motor Sales Company, of this city, and will exploit National cars in this section.

SEATTLE—Hugh A. Baird, manager of the Franklin Automobile Company, of this city, has organized a selling agency which is known as Hugh A. Baird & Co. In addition to handling the Franklin product, he will act as agent for Reo touring cars, runabouts and trucks, and the Apperson line.

BUFFALO, N. Y.—The Lippard-Steward Motor Car Company, of Buffalo, has just secured the large and well-located plant formerly occupied by the Thomas Taxi-Cab Company, moving into the new quarters October 1. The company will manufacture 1,500-pound capacity delivery motor trucks, police patrols, ambulances, chemical fire wagons, etc.

NEW YORK CITY—E. Louis Kuhns, long manager of the motor car department of the Chicago Studebaker branch, has been transferred to eastern territory and last Monday he assumed the management of the New York Studebaker branch. Temporarily Lafayette Markle, special factory representative, is in charge of the Chicago branch, while H. E. Westerdale is looking after the retail business.

SAN FRANCISCO—The largest and most elaborate automobile building in San Francisco has just been occupied by the H. O. Harrison Company, distributors of Peerless and Everitt cars in California. The building is said to be one of the largest in the United States devoted exclusively to automobile purposes. The building is four stories on the east end and three stories on the principal frontage on Van Ness avenue.

SAN FRANCISCO, Sept. 26—The Speedwell Motor Car Company, of California, has moved to new and larger quarters at 422-428 Van Ness avenue. This move affords a larger showroom, and there is a good-sized workshop in the rear. L. V. Lynch, president and manager of the company, came here from the East two years ago, and is now recognized as one of the most aggressive men in the California field.

SAN FRANCISCO—Bert S. Bingham, Pacific Coast representative of the Regal Motor Car Company, of Detroit, has been appointed manager of the eastern district of that company, with headquarters in New York City. He will be in charge of the warehouses in that territory. He has already left for his new field. Bingham established the Regal branch in San Francisco two years ago, and since the abolition of the branch in favor of a private agent, he has been general coast representative of the company.

SAN FRANCISCO—The Standard Motor Car Company, the newly appointed coast distributors of Division B of the United States Motor Company, comprising the Stoddard-Dayton and the Courier lines, is preparing to make a considerable enlargement of its quarters at the corner of Golden Gate and Van Ness avenues, which marks the center of the automobile retailing district of the city. The Standard has a lease of the entire building, and it is probable that some of the other firms will be obliged to find new quarters so that the Standard may expand.

SYRACUSE, N. Y.—The R. N. Tannahill Company, of Greenville, S. C., has signed up the Franklin dealership for that locality, succeeding C. M. Wing. J. W. Vernam, of New Kensington, Pa., has contracted with the Franklin Automobile Company as a sub-dealer in the Pittsburg district. Charles Wirth, of Terre Haute, Ind., has been made salesman by the Terre Haute Automobile Company, the Franklin dealer in that town. The Franklin Automobile Company is to be represented the coming season in the southern half of Texas by the Franklin Motor Car Company, of Houston.

SAN FRANCISCO—The Apperson car is now represented in San Francisco and throughout Northern California by the Weeks-Covell Automobile Company, who will also handle the Pathfinder and Parry cars in this territory. W. H. Weeks, a San Francisco architect, is president of the newly organized company, with J. H. Covell, a successful garage man of Watsonville, as vice-president and manager. Russell Cuthbert has been appointed sales manager. Temporary quarters have been secured at 550 Golden Gate avenue.

PATENTS GONE TO ISSUE

FRICTION CLUTCH—Being of the multiple-cone type.

The clutch covered by this patent and shown in Fig. 1 comprises a number of driving and driven members with opposing surfaces, frictionally engaging segments being interposed between the surfaces and arranged one in advance of the other in a ring-shaped series substantially concentric with the surfaces mentioned. A portion of each segment is fixed to one surface, and springs are provided between each segment and the surface it is connected to, which springs normally hold surface and segment out of frictional engagement. Means are also provided whereby the members may be moved axially toward one another to bring about engagement of the frictioning members.

No. 1,004,047—to Willard C. Lipe, Syracuse, N. Y. Granted September 26, 1911; filed December 7, 1905.

WHISTLE—Being of the type driven by an electric motor.

1. The whistle this patent relates to consists of a waterproof casing with an opening therein, an air pump mounted in the opening, an outwardly projecting whistle forming the pump outlet. Within the casing a rotary motor is mounted which is connected to the pump by gearing.

No. 1,004,337—to George F. Atwood, New York City, assignor to Western Electric Co., Chicago, Ill. Granted September 26, 1911; filed October 25, 1907.

GEARSHIFT LOCK—A plate for locking change-speed lever in neutral position.

The lock (Fig. 2) comprises an H-plate, a lever adjustably guided by the plate, which includes means for holding the lever in neutral position, a member being removably fitted to the H-plate and embracing a portion of the lever and operating to hold the lever against movement on the

H-plate. The member mentioned has spaced walls with a recess therein and the opposite wall has a bolt-receiving passage. A second member is removably fitted to the first member and provided with a lug removably fitting the recess in the first member, and it also carries a bolt adapted for locking engagement in the aforesaid passage to hold the first and second member connected with each other.

No. 1,004,396—to David H. Evans, Detroit, Mich. Granted September 26, 1911; filed March 7, 1911.

ENGINE STARTER—Consisting of a ratchet and pawl.

The starter this patent refers to (Fig. 3) consists of a combination with a ratchet wheel having a hub fixed to the end of the engine shaft, of a drum surrounding that wheel and loosely embracing its hub and having a hole in line with the shaft mentioned. A wide pawl is pivoted within the drum and normally pressed into engagement with the ratchet by a spring. Means are provided to direct the rotation of the drum in one direction, as well as retracting means for rotating it in the opposite direction. A bracket is secured to the automobile frame, projects fixedly and axially through the hole in the drum, and a finger rises rigidly from the bracket within the drum between the latter and the wheel. The tip of this finger constitutes a cam upon which the pawl rides as the drum returns to its retracted position.

No. 1,004,508—to Ernest N. Ward, Baxter Springs, Kan., assignor of one-half to Jay F. Ripley, Joplin, Mo. Granted September 26, 1911; filed January 5, 1911.

SPARK PLUG—Being of the make-and-break type for low-tension ignition systems.

1. The plug (Fig. 4) has among its elements an electromagnetic coil having a core which is provided with a semi-cylindrical recess with a flat face. From this

face a series of studs project, being arranged longitudinally and eccentrically of the core. In the recess mentioned fits loosely a semi-cylindrical armature having an inner face which is provided with a series of recesses, loosely receding studs, whereby the armature may be rocked to and from the core. A movable contact carried by the armature is connected therewith, and a stationary contact is provided which is contacted by the movable contact when the armature is in the outward position, means being provided to hold the armature in that position.

No. 1,004,325—to Max Wild, Stuttgart, Germany. Granted September 26, 1911; filed November 6, 1908.

PNEUMATIC TIRE—Consisting of a special cover and lining.

1. In combination with a wheel rim and a tire cover held thereto, an air tube within said cover, a lining between said cover and the air tube, having an inextensible crown which is recessed in proximity to the tread and adapted to holding the outer cover distended and to take up the vibrations of the running jars while being guarded by said crown against excessive air pressure from the air tube substantially as set forth.

No. 1,004,343—to John Charles Barker, Leeds, England. Granted September 26, 1911; filed May 7, 1910.

COMBINED VALVE AND TRAP—Consisting of a valve with a partition which forms a baffle plate to trap moisture.

A valve casing having an inlet and an outlet, a partition in said casing, a trap extending downward from said casing, one side of trap communicating with said inlet and the other side thereof communicating with the outlet.

No. 1,004,239—to Wm. Brunton, Elwyn, Pa. Granted September 26, 1911; filed October 22, 1911.

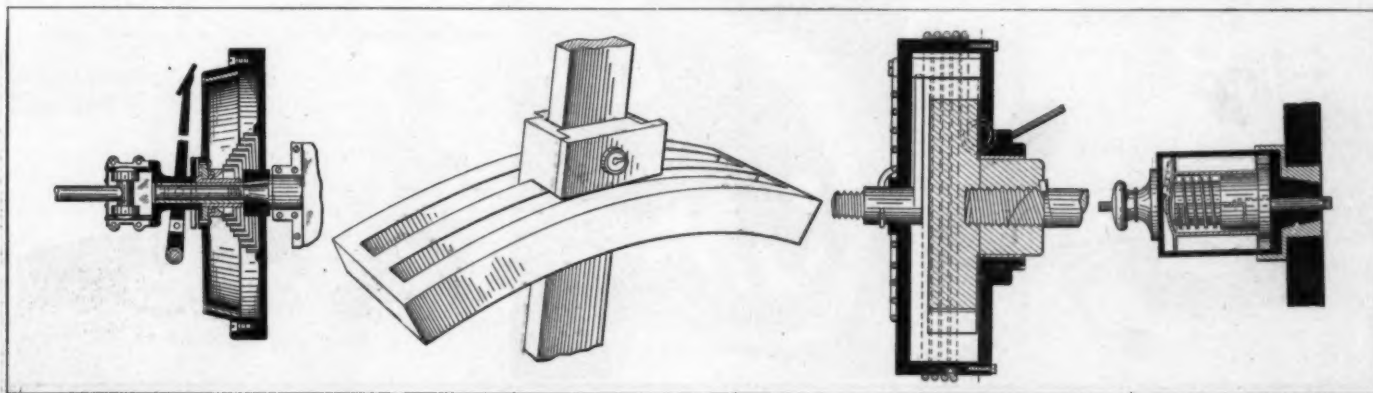


Fig. 1—Lipe Clutch

Fig. 2—Evans Gearshift Lock

Fig. 3—Ward Engine Starter

Fig. 4—Wild Spark Plug

Newest Ideas Among the Accessories

Prest-O-Tire Tube

THE Prest-O-Tire tube shown in Figs. 3, 4 and 5 has been constructed with the object of pumping up a tire in the minimum space of time and with the least effort. Fig. 4 shows the external view of the tube in its application to a tire. The tube is made of a piece of steel 1 foot long, and at its upper end is closed by a copper

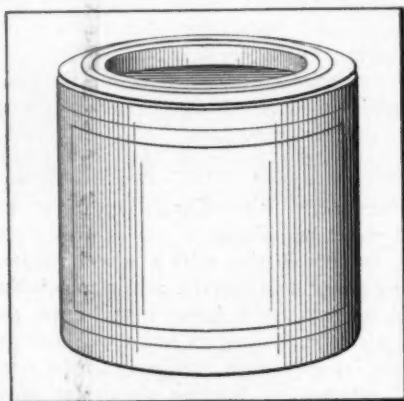


Fig. 1—Goodyear quick repair gum

plate fully strong enough to withstand the 900 pounds pressure of the carbonic acid gas enclosed in the tube. Fig. 3 shows the handle H_1 screwed off the tank; it contains a passageway for the gas and a needle N_1 , which when screwed down cuts a hole in the copper plate shown at C_1 Fig. 5). The punctured plate is seen at P_1 . If the needle valve is opened by turning the handle, the gas is allowed to escape through the passageway which is connected up to a flexible tube F_1 and this in turn to the tire valve. When the tire is inflated to the desired degree the handle is turned so as to close the valve and shut off the gas.

The section of the working parts is seen

in Fig. 5, and the component parts are also shown. The seating S_2 of the needle valve is bored through the copper plate C_1 and so arranged that lifting the needle makes a free way for the carbon dioxide. The valve casing C_3 is bored to permit of a passage for the gas which rises around the needle N_1 and escapes through O_1 . The needle is fastened to the body of the valve spindle S_1 , which is threaded at P_2 to engage with the threaded inside of the casing. The upper part of the spindle is supported by a bushing B_1 and the handle H_1 serves to operate the needle.

At a test made with the tube a 36 x 3 I-2 tire was inflated from 0 to 90 pounds within 1 minute and 32 seconds. The tube is the product of the Prest-O-Lite Company, Indianapolis, Ind. First cost of the tank is low and after the contents have been used for inflating purposes, it is exchanged for a full tank for a very small sum.

Goodyear Repair Gum

The Goodyear Quick Repair Gum comes in tins, as shown in Fig. 1, and its purpose is the repair of cuts in outer tire casings as well as in inner tubes. In either case the simple process of repairing the damage consists of two steps. After washing the wound with gasoline it is coated with Goodyear patching cement, two coats being necessary to prepare the tube or casing for the subsequent treatment with the repair gum. After the second cement coat has dried, a sufficiently large piece of the repair gum is kneaded with the fingers until it becomes very soft; then it is applied to the wound, taking care that the latter is filled completely and that the gum adheres to the cement at all portions of the wound. This repair gum is manufactured by the Goodyear Tire & Rubber Co., Akron, Ohio.

Doyle Signal Light

In Fig. 2 is shown a combination of a tail lamp, license number and direction signal, the accessory illustrated being Doyle's warning signal light. It is a small metal box containing four incandescent lamps which may be lighted singly or in unison from a little switchboard attached to the steering wheel. The lights are placed be-

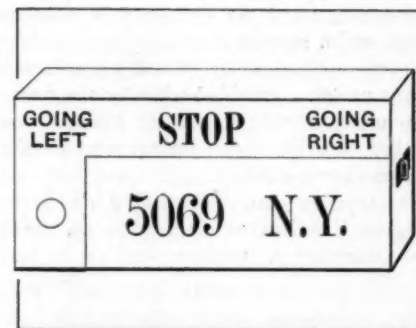


Fig. 2—Doyle's warning signal light

hind perforations reading as in Fig. 2, and by turning on any of the upper three lights, the chauffeur may inform the driver of the car behind of his intention of turning into the next street to the right or left, as the case may be, or of stopping, advising his follower to slow down. The usual manner of giving these signals is by a motion of the arm, which is hardly visible at night, so that some method of illumination is necessary. The lower part of the signal box contains a pocket for a number plate, which may be removed therefrom at will, and a red jewel throwing enough light on the number to make it legible. The lamps in the top row, being used only occasionally, require very little current. The selling office of the maker is at 1777 Broadway, New York City.

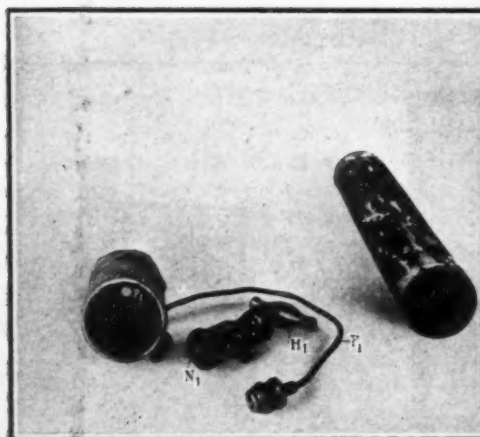


Fig. 3—Prest-O-Tire tube and fittings



Fig. 4—Application of tube to tire

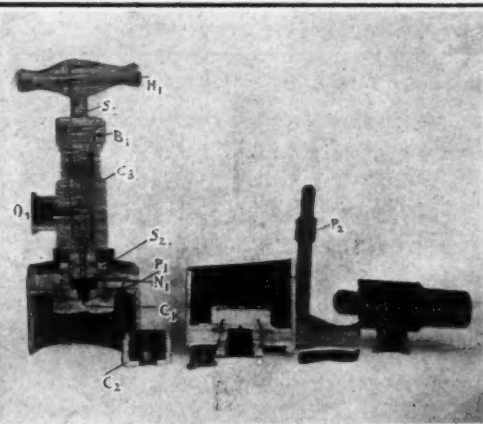


Fig. 5—Section through working parts